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IN SOCIAL PSYCHOLOGY

Articles by

Videbeck and Bates
Palmore, Lennard, and Hendin
Harary
Dinitz, Mangus, and
Fasamanick
Pryor and Bass
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SOCIOMETRY

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Sociometry is concerned with the entire range of interests and problems represented by research in social psychology. It is the policy of the editors to seek those manuscripts for publication which represent the significant research interests of investigators who are concerned with giving the field of social psychology theoretical structure and reporting research which is clearly focused, well designed, and competently conducted.

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An Experimental Study of Conformity to Role Expectations¹

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ALAN P. BATES, *University of Nebraska*

Modern treatment of the dual problem of conformity to and deviation from group standards probably began with Sumner's distinction between folkways and mores. However, the earliest systematic and empirical treatment of these problems is found in Durkheim's classical studies. In *The Division of Labor in Society* he examined the hypothesis (among others) that behavioral conformity is a function of the degree of division of labor (4). In his volume, *Suicide*, Durkheim dealt with group standards as regulators of individual behavior (5).

Since Sumner and Durkheim, numerous studies have been reported in the literature, and in recent years have often been carried out in the context of small groups. Some authors have treated behavioral conformity as an independent variable, as illustrated by the work of Jennings (9) and Newcomb (10), while others have made behavioral conformity a dependent variable, as seen in studies by Travers (12), Festinger, Schachter and Back (7), and Asch (1). Asch's work is unusual in that he specified the origin and destination of social pressures. In other words, the subject's conforming behavior could be accounted for as the consequence of *directional* pressures upon the person. Most other studies do not have this directional characteristic or do not have it in such an unambiguous way. The directional quality which Asch treated in a highly simplified situation can also, the present authors assume, be utilized in the analysis of more complex sets of pressures, such as those usually denoted by role analysis. The rationale for developing role theory is that knowledge of role expectations permits the explanation of both similarities and differences in the behavior of group members.

A ROLE THEORY APPROACH TO CONFORMITY AND DEVIATION

The behavior of a number of people in interaction over time will inevitably come to be organized by (more or less) shared role expectations of what that behavior should be. Both the motive satisfaction of individual members and the performance of essential functions leading toward achievement of the group goal ensure that the situation will be defined so as to include those evaluative elements that we call role expectations.

The most general assumption underlying the research reported here, then,

¹ This study was aided by a grant from the University of Nebraska Research Council.

is that the behavior of a number of people in interaction is at least in part a function of their own expectations of what that behavior should be. This general assumption has an axiomatic character which serves as an excellent point of departure, but alone tells us nothing about the specific conditions under which varying degrees of conformity of behavior to role expectations will occur. The purpose of this report is to attempt a specification of some of the conditions which affect conformity. It is important to be aware that the paper is not concerned with *role* as the patterned total of expectations applying to a group member, but with *role expectations* applying to a single type of behavior, the latter being seen as single components of role.

It will be helpful at this point to distinguish between a group member who expects certain behavior of another member, speaking of him as a *judge*, and a member of whom behavior is expected by one or more judges, labeling this person a *social object*. As interaction proceeds, every member is both judge and social object. The concept of "role expectations" implies that behavior of a certain kind is expected of one or more social objects—behavior as perceived and defined by interacting group members. Perhaps one reason why role theory remains for the most part at a quite primitive level of development is that concepts like role expectations are multidimensional, and the relevant dimensions are seldom specified. For purposes of the present study, what are the essential conceptual distinctions relating to role expectations which will permit formulation of testable hypotheses transcending the broad proposition that behavior is a function of role expectations?

The Language of Role Description

Role analysis focuses upon perceived behavior, whether in the process of interaction, in anticipation of interaction, or in retrospective reflection upon interaction. This emphasis upon the members' own view of events marks role theory as an essentially culturological approach, as distinguished from orientations such as Bales' interaction process analysis, in which member behavior is perceived in categories developed and applied by the researcher (2). An assumption is made here that group members can and do, however intuitively or vaguely, classify behavior into functionally similar classes, for instance, "friendly behavior" or "antagonistic behavior." The term *act-type* has been chosen to represent these functionally homogeneous classes of member behavior.

Intensity of Role Expectations

The term *intensity* will apply to two aspects of role expectations:

1. *Interact-type Intensity*. There will be variations between act-types in their relative importance for achieving individual and group goals. The term

interact-type intensity refers to this kind of relative importance. This implies that members can perform a kind of averaging operation in which, ignoring changing situational contexts and member differences, judgments are made concerning the relative importance of different kinds of behavior to the group as a whole and to the individual judge over a considerable period of time.

2. *Intermember Intensity*. For any single act-type, variations of role expectation intensity may exist such that some members (considered as social objects) will be expected to perform that kind of behavior more than other members. Defined in this way, intermember intensity of role expectations offers a way of operationalizing concepts like role differentiation and division of labor. For instance, role differentiation may be defined as the degree of variation in intermember intensity of role expectations. No differentiation would exist in a situation where there was no variation in intermember intensity on any role expectation.

Consensus among Judges

The extent to which the behavior of social objects is influenced by role expectations is assumed to be influenced by the degree of agreement among judges. More specifically, consensus may vary with respect to

1. The ways in which member behavior is perceived and classified, i.e., the definition of act-types.
2. The extent to which members agree on (a) whether or not an act-type ought to be performed, and (b) whether or not a particular social object ought to perform an act-type.
3. The extent to which the members are in agreement on (a) interact-type intensity and (b) intermember intensity.

The hypotheses with which this paper is concerned make use of the foregoing conceptual distinctions. A fuller role analysis of conforming behavior would also incorporate at least two other distinctions: the degree of agreement between self-expectations and the expectations of others, and accuracy with which a social object perceives the expectations of others. While not reported here, the larger project, of which the present paper reports one phase, included data on these social-psychological variables. A fuller discussion of the theoretical model, incorporating both sociological and social-psychological factors has been presented by Videbeck (13).

The foregoing discussion implies a conception of conformity. Made explicit, conformity is defined as the degree of correspondence between behavior and role expectations. Also implicit in the discussion are three propositions, as follows:

- I. Every occurrence of an act-type conforms to some role expectation.

- II. Conformity of behavior to role expectations varies directly with the strength of intensity of the role expectations.
- III. The intensity of a role expectation as it impinges on a social object increases in strength with increase in consensus.

In a later section these three propositions will be applied to the particular conditions of the present research and the hypotheses to be tested will be derived from them.

THE EXPERIMENT

The Groups and the Group Task

Five six-member groups were chosen from a list of volunteers, all enrolled in an undergraduate course in sociology and all members in the upper quartile of their class distribution on three standard educational criteria: the L score of the ACE Psychological Examination, English Usage Test, and college grades. The groups were given identical tasks. "You are to imagine that your group is a committee of civic-minded persons appointed by the mayor and city council to analyze problem areas in the relations between parents and their teenage children, to survey the local resources for helping families deal with these problems, and to evaluate these resources and make suggestions for improving them." Other instructions defined in considerable detail how and when the work was to be done. The groups were given 16 hours for completion of the task. Written group reports were graded and formed a substantial part of the final grade in the course in which all were enrolled.

The Measurement of Role Expectations

The measurement of role expectations was staged in three steps: first, identifying those types of behavior which group members felt were of at least *some importance to their group*; second, differentiating among selected types of behavior according to the *degree to which each ought to be performed*; third, differentiating among the group members relative to the degree to which *each member ought to perform a particular type of behavior*.

Identification of act-types was accomplished through interviews. After a pretest group had met for 8 hours of discussion, each member was asked a series of open-ended questions designed to direct attention to member performance. Some 125 different items of expected behavior were obtained from the six members of this group, and these were coded into behavioral categories. A sample of members from the four experimental groups was then similarly interviewed and their responses coded. Ten behavioral categories

emerged which were common to both sets of interviewees. These categories were defined as the act-type components of the role expectations in the groups studied. They are as follows:

1. To correct or evaluate the written report before it is turned in
2. To keep track of time
3. To plan the work to be done
4. To be concerned with how the members get along with each other
5. To bring the group back to its task and reduce irrelevant discussion
6. To find a way of settling arguments
7. To criticize and evaluate ideas presented in the discussion
8. To summarize and pull together the group's discussion
9. To give ideas and facts which bear on the work assigned to the group
10. To guide the group's discussion

Determination of the degree of interact-type intensity was the second step. Using a variant of the "constant-sum" method, a device was constructed to facilitate these measures. This consisted of concave wooden trays, laterally joined together, and vertically set on a baseboard with a slight backward tilt. One hundred checkerlike chips (one hundred being the constant sum) were made out of 1½-inch dowel rods. To measure interact-type intensity each tray was labeled with one of the ten behavioral categories. Subjects were instructed: "Distribute the one hundred chips among the ten categories according to how strongly you felt each ought to be performed. Give the most chips to that type of behavior which you feel most strongly about." After the subject had completed this task, the experimenter recorded the number of chips in each category. The trays had a slot running the length of the tray, and the back of the tray was calibrated to facilitate the recording process.

The third and final stage was measurement of the intermember intensity of role expectations. Again the device was used, although in this case only six trays were needed. Each tray was labeled with the name of a group member. A card with a behavioral category printed on it was placed in front of the subject, who was then instructed: "Distribute the one hundred chips among the members according to how strongly you feel each member ought to perform this type of behavior." When completed, the number of chips assigned to each member was recorded. This procedure was repeated for each act-type.

For convenience in testing the hypotheses, the behavioral data were gathered in a form making possible direct comparisons with role expectations. Using the tray device, subjects were given two tasks. First, they were asked to "distinguish between the ten types of behavior according to how often each type of behavior was (actually) performed in your group as a whole."

Second, confronting them with each act-type, one at a time, they were asked to distinguish "among the six members of your group according to how often, in your opinion, they did perform this type of behavior." The first of these measures is comparable to interact-type intensity, and the second is comparable to intermember intensity.

Limiting Conditions

The generality of the operational hypotheses listed below is limited by a number of conditions of the experiment. First, only six-person problem-solving discussion groups were used. Second, role expectations were limited to ten standardized, mutually exclusive act-types all of which had positive intensities associated with them. These ten act-types did not necessarily include all relevant behavior which might occur in such groups. A third limitation, at least for the present report, is the fact that only mean values of role expectation and behavioral measures were utilized. Finally, the behavioral data represent perceptions about behavior rather than contemporaneously observed reports.

The Hypotheses

1. Given propositions I and II, and summing for all members within a group, the frequency with which an act-type is performed will correlate positively with the intensity value assigned to that act-type.

2. Given proposition III, the correspondence between act-type frequency of performance and act-type intensity will increase with increase in consensus on interact-type intensity.

3. Given propositions I and II, and given a particular act-type within a group, the frequency with which a social object performs that act-type in comparison with other social objects will correlate positively with the intermember intensity value for that act-type.

The final hypothesis involves a combination of the two measures of role expectations: interact-type intensity and intermember intensity. Since a constant sum of one hundred units was used, the product of multiplying the two values yields role expectation values in a convenient form. In this form, the intensity with which a social object is expected to perform any act-type is directly comparable with the intensity with which any other social object is expected to perform that act-type or any other act-type.

4. Given propositions I and II, for all social objects over all act-types, the combined role expectation values will correlate positively with similarly combined behavior frequencies.

TABLE 1
Interact-type Conformity

Group	Tau coefficients
I	.82
II	.64
III	.75
IV	.87
V	.73

NOTE: N = 10. Tau coefficients are significant at the .05 level when tau > .47.

ANALYSIS OF THE FINDINGS

Hypothesis 1

Kendall's tau was used as a statistical technique for testing the association between interact-type intensity and the corresponding measure of behavior. The results are presented in Table 1.

These findings support the hypothesis. As impressive as these coefficients may be, it is possible to raise certain questions concerning them. In particular, are the measures of intensity and performance independent of each other? This question has far-reaching implications for the type of role analysis attempted here, where the investigator is intentionally concerned with *member perceptions* of behavior and the relationships among different aspects of member perceptions. While no outside measurement of member *behavior* by act-type was made, a minimum of two weeks intervened between the two sets of measures which were to be correlated. Considering this lapse of time, the investigators feel that if the two measures are dependent upon each other, the dependence is probably due to some unknown, enduring psychological factor presumably common to all members.

There is some support in the literature for the view that member ratings of behavior correlate highly with interactional records of outside observers. Gibb cites two studies in which group member identifications of leaders are substantially comparable to the identifications made by independent observers (8). Bates and Cloyd found that "the ranks of members based upon the volume of interaction as recorded by the Bales method and rank orders derived from summarized ratings of group members" produced correlation coefficients within the range .88 to .94 (3).

Hypothesis 2

The second hypothesis is concerned with the impact of consensus about interact-type intensity on the relationship between interact-type intensity and interact-type performance frequency. When the average performance rank is

correlated with the consensus rank, tau equals .24, which is significant at only the .20 level.

This finding is interpreted to mean that in the present setting, the mean level of intensity of role expectations has far greater influence upon behavior than the degree of consensus with respect to intensity. Why should this be so? It may be that in perceiving role expectations, individuals can more easily discern the general level of intensity confronting a social object than they can identify either the particular intensity values associated with different judges, or the range of intensity values among all judges in the group. The concept of "de-individuation" as used by Festinger, Pepitone, and Newcomb may lend support to this interpretation (7).

Another possibility can be presented by raising the question: Is it theoretically meaningful to speak of consensus about intensity of role expectations? Since intensity is measured in scale values, consensus about intensity is simply a description of the degree of central tendency existing in the distribution of intensity values. In the present study, where all act-types are known to be positively expected from the members, it may well be that as effective forces upon behavior intensity values are additive, and hence the distributional characteristics of these values are irrelevant. It is of course quite possible that in the situation where there is a group of judges with "competing" role expectations, the distribution of intensity values may have relevance for determining the effectiveness of the expectations.

Hypothesis 3

Again, Kendall's tau was used to test this hypothesis, and the results are presented in Table 2. The act-types are listed in this table in the same sequence as that in which they were presented earlier.

Comparing the tau coefficients presented in Table 1 with those in Table 2, it is evident that the over-all level of significance is lower in the latter. Two

TABLE 2
Intermember Conformity, by Act-type

Groups	Act-types									
	1	2	3	4	5	6	7	8	9	10
I	.48	.87	.60	.33	.60	.87	.62	.93	-.07	1.00
II	.87	.47	.87	.48	.90	.90	.87	.87	.73	1.00
III	.87	.90	.90	-.07	.93	.73	.62	.47	.73	.60
IV	.73	.73	.60	.93	.60	.62	.73	.87	.87	1.00
V	.73	.73	.73	1.00	.47	.21	.47	.60	.87	.87

NOTE: N = 6. Tau coefficients are significant at .05 when tau > .73.

explanations may be advanced to account for this difference. The first, purely statistical, is that the standard error can be expected to be proportionately greater in the present hypothesis because the number of cases is smaller. However, this factor probably does not account for all the observed difference. A more substantive explanation of the variability is that since comparisons between individuals rather than comparisons between act-types are being made in Hypothesis 3, evaluations will be influenced to a greater extent by such things as intermember liking and disliking and the reluctance of people to report distinctions among associates (2). Despite these considerations, it is evident that Hypothesis 3 is tenable in most cases.

Hypothesis 4

Table 3 presents the product-moment correlation coefficients bearing on this hypothesis.

These data are felt to have considerable importance, not only for the present study, but more generally for the field of role analysis. Traditional role analysis has been criticized for its essentially *ad hoc* character. The concept "group standard" (closely allied to the notion of role expectation) escapes this criticism and has proved useful in explaining differences in performance between groups. The concept of role expectation, as used in this paper, is akin to the notion of group standard in that both are seen as applications of pressure upon member behavior. The difference between the two concepts is that whereas it has been assumed that group standards apply equally to all members, role expectations apply differentially to members.

To the extent that role expectations were differentially operative in these groups, the findings appear to support the conception of role expectations as directional forces upon behavior. It will be remembered that the first hypothesis posits a relationship between gross interact-type intensity and gross interact-type frequency. Hypothesis 3, on the other hand, suggests the

TABLE 3
Intermember Conformity Over All Act-types

Group	Product-moment Correlation Coefficients
I	.74
II	.89
III	.88
IV	.93
V	.78

NOTE: N = 60. Product-moment correlations are significant at the .05 level when $r > .25$.

relationship between intermember intensity and intermember frequency of behavior for a particular act-type.

The findings relevant to these two hypotheses clearly suggest that members were confronted with differing judgmental tasks. What has been done in Hypothesis 4 is to take simultaneously into account the effects upon behavior of both kinds of judgments, viz., (a) differences in interact-type intensity and (b) intermember intensity for a given act-type. In other words, the values given in Table 3 represent the correspondence between the extent to which a particular person ought (in comparison with other individuals) to perform a particular act-type (in comparison with other act-types) on the one hand, and the comparable behavioral measures on the other hand.

SUMMARY

The problem of behavioral conformity has been analyzed in terms of role concepts. Role expectations were seen as forces of varying intensity which are differentially applied. Thus, behavioral differences have been presented as functions of differentials in the strength of the forces represented by role expectations.

Role expectations on the conceptual level are multidimensional. Two sociological aspects of the concept were distinguished: intensity and consensus. Hypotheses relating differentials in member performance to intensity and consensus were drawn from three general propositions. These hypotheses were tested in an experiment involving five six-member groups, all relatively long-lived as experimental groups go. The three hypotheses linking intensity of role expectations with differentials in member performance were strongly supported by the evidence, while the single hypothesis linking one aspect of consensus with variations in member performance was found to be unacceptable by the usual statistical criteria.

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Similarities of Therapist and Patient Verbal Behavior in Psychotherapy¹

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One of the recurrent propositions of the behavioral sciences has been summarized by Homans in stating that: "The more frequently persons interact with one another, the more alike in some respects both their activities and their sentiments tend to become" (2). Newcomb further claims that: "There is, in fact, no social phenomenon which can be more commonly observed than 'the tendency for freely communicating persons to resemble one another in orientation toward objects of common concern' (5). There has been much theoretical elaboration and some empirical research undertaken concerning this phenomenon (e.g., 1, 2, 5, 6, 7, 8). However, the general proposition still needs a great deal of specification. There is little known about which situations, in which respects, to what degree, when, and why interacting individuals tend to become alike. This paper, based on a study of psychotherapy, suggests some answers to the questions in which respects, to what degree, when, and why therapists and patients tend to behave more alike in psychotherapy.

THE DATA

Eight psychotherapies (four therapists² with two patients each) were tape recorded for a period of eleven months. At present over one hundred sessions have been transcribed and each proposition in these sessions has been analyzed along six major dimensions. The result of this content analysis was then punched onto about 10,000 IBM cards.

¹ We gratefully acknowledge the support of the National Institute of Mental Health, U. S. Public Health Service, under Grant M-1076-(C2). We would also like to express our appreciation to the therapists and patients who have made possible the collection of data for this study. This paper may be identified as Publication #A-248 of the Bureau of Applied Social Research.

² Three of the four therapists have been or are currently affiliated with a Psychoanalytic Institute recognized by the American Psychoanalytic Association. The fourth therapist is a graduate of an APA recognized Clinical Psychology program and has been in private practice for more than ten years. Though no attempt was made to select therapists in terms of a particular orientation, the approach of all four therapists can be described as psychotherapy based on psychoanalytic principles.

METHOD I

The first step in investigating these questions was to examine the natural unit, the therapeutic session. Correlations between given types of therapist and patient verbal behavior were computed. Specifically, correlations were computed between percentage of therapist propositions³ and percentage of patient propositions which were of the same kind, i.e., which were classified into the same category. This was done for three aspects of communications. The aspects of communications chosen for study were considered basic to any interaction system, yet especially relevant to the therapeutic situation, and likely to exhibit increasing similarity over time (if indeed there occurs increasing similarity in *any* kind of verbal behavior in psychotherapy). We are using "similarity" in the sense of agreement on what the object of discourse or mode of communication about this object should be rather than in the sense of agreement on *evaluation* or *feelings* regarding this object. Similarity only implies that the actors are oriented toward the same object or employ the same mode of communication.

The three aspects of communication chosen for study were: (a) Primary System References, (b) Evaluative Communications, and (c) Affective Communications.

(a) Primary System References deal with reciprocal therapist-patient role relations. They revolve around the therapist's and patient's obligations and activities vis-à-vis each other. They frequently consist of discussions of the purposes of therapy, of what the therapist expects of the patient in the therapeutic situation, and of what the patient expects of the therapist. Primary System References sometimes constitute more than half of all therapist communications during the initial hours of therapy but may be less than .20 of all therapist communications by the tenth hour of therapy. This area is considered central to the therapeutic process. The exchange of communications between therapist and patient regarding their respective roles is one avenue through which the patient "learns" the patient role and is enabled to function within it.

Some illustrations of communications classified as Primary System References are:

Therapist: "Well, it is to be expected that one seeking help would be the one who would talk."

Therapist: "No action, just words. Your job here is just to learn how to put your thoughts, your feelings, your memories, into words."

Patient: "Isn't a therapist able to tell me a thing like that?"

³ A proposition is a verbal utterance which contains a subject and a predicate either explicit or implied; usually, the verbal expression of a single idea.

Patient: "I don't quite understand; what topic do you want me to talk about first?"

(b) Evaluative propositions are those which give or ask for appraisals or statements of value. This category covers two of the Bales Interaction Process categories: "Gives (asks for) opinion, evaluation, analysis, expresses wish." Though we have also classified our data along the other dimensions of instrumental activity according to Bales (description-orientation, prescription-control), the analysis of similarities over time has been restricted to the Evaluative dimension. It was felt that evaluation of behavior was an especially recurrent feature of therapy and that, therefore, tendencies toward similarities in therapist-patient verbal behavior would have an opportunity to emerge.⁴

Some illustrations of communications classified as Evaluative are:

Therapist: "What do you think is wrong with you?"

Patient: "I wouldn't want to be supported by a woman."

(c) Affective propositions are those which are directed toward or express feelings or emotions. Propositions which refer to love, fear, hate, pleasure, etc., were classified in this category. The structure of affective communications has received attention by the small group researchers in relation to the task accomplishment. It is widely agreed that eliciting information about patient affect at strategic times is a primary purpose of the therapeutic interaction. Whether an increase in therapist communications toward affect results in an increased patient affective yield is a question of theoretical as well as practical interest.

Some illustrations of communications classified as Affective are:

Therapist: "Can you tell me why you are crying?"

Therapist: "How did you feel about this?"

Patient: "I do not want my hostility noticed."

RESULTS I

In order to examine the possibility of an increase over time for the percentage of patient and therapist propositions in the above dimensions, we computed the Pearsonian correlation (r) for three groups of sessions: sessions one and two; sessions five and six; and two sessions from the third and fourth months of therapy. Table 1 presents the correlations for the above three dimensions at the three different times in therapy.

⁴It should be noted that every proposition was classified along all the dimensions discussed here as well as along others. It is possible, therefore, for a proposition to be both Evaluative and a Primary System Reference.

TABLE 1

Increase in Similarity of Therapist and Patient Behavior Over Time

	Correlations between Per cent of Therapist and Patient Propositions for:		
	Sessions 1 and 2	Sessions 5 and 6	2 sessions from 3rd and 4th months
Primary system	.72	.66	.88
Evaluation	.36	.45	.58
Affect	.23	.43	.70

n = 48 sessions.

Table 1 shows that for each dimension of communication there is an increase in correlation over time with a marked increase in the correlations for Affective propositions. These findings suggest that there is an increase in similarity of patient and therapist behavior over time with regard to these three areas.

DISCUSSION

One of the explanations for the above increasing similarity of behavior is that it is due to an increasing sensitivity of the patient and therapist toward each other's verbalizations. This would imply that if the patient discusses the process of therapy (Primary System), the therapist is more likely to respond with some propositions about therapy also. Or if the therapist inquires of the patient as to how he *felt* about some event (Affect) the patient becomes more likely to respond with some proposition about his feelings. Thus, we are using "sensitivity" in the sense of "degree of responsiveness to stimulation" (Webster's dictionary). In this case, the stimulation is a primary system reference, an affective proposition, or an evaluative proposition. (How the degree of responsiveness is measured is discussed under Method II.) This usage of "sensitivity" should not be confused with another usage in which sensitivity is equated with "tactfulness." In this latter sense a person may be called sensitive or tactful when he *changes* the object of conversation to avoid an area of conflicting views. Our usage more simply defines sensitivity as responding with the same object or mode of communication. However, the process of increasing sensitivity in therapy can assume three logically different forms:

- (a) Increasing sensitivity of patient toward the therapist
- (b) Increasing sensitivity of the therapist toward the patient, or
- (c) Increasing sensitivity of both toward the other

(a) Proceeding from one point of view one would argue that the tendency toward symmetry observed in our data is due to an increased sensitivity on the part of the patient to the therapist's communications. It is the therapist who, in the view of learning theorists as well as in the Parsonian formulation, extends positive sanctions for appropriate behavior (as exhibited by relevant verbal responses) and imposes negative sanctions for inappropriate behavior. It is the therapist who "knows" what the patient's role is, and it is the patient who must "learn" it by responding appropriately. (b) However, representatives of the "nondirective" approach might argue that increasing similarity is due to an ever-increasing sensitivity of the therapist to the patient, as the therapist learns more about the patient. In this view the therapist is skilled in "following" where the patient leads rather than dominating the relationship. (c) And finally, following through on the sociological generalization summarized by the Homans and Newcomb statements at the outset of this paper, one would suspect that both participants in a dyad—and the psychotherapy situation would be no exception to this—contribute to the emergence of symmetry.

Since we have determined the interrelations between therapist and patient propositions in eight actual therapies, we are in a position to specify which of the above hypotheses (if any) apply. In order to do this we constructed an Index of Patient Sensitivity and an Index of Therapist Sensitivity.

METHOD II

The Index of Patient Sensitivity is computed by the following three steps: (These instructions apply to the Affect dimension, but they may be made to apply to any other dimension by substituting the other dimension for the word "Affective.")

1. Calculate the per cent of therapist Affective statements⁵ which are followed by patient Affective statements. This is the percentage of similar affective responses.
2. Calculate the per cent of therapist *non-Affective* statements which are followed by patient Affective statements. This is a percentage of *dissimilar* responses.
3. Divide the percentage of *similar* responses by the per cent of *dissimilar* responses. This yields the Index of Patient Sensitivity to Affect. This index is really a *ratio* of the frequency with which the patient responds in a

⁵ A statement is defined as an uninterrupted sequence of propositions by either participant. Thus, an Affective statement would be a statement containing one or more Affective propositions. Similarly, a non-Affective statement is a statement containing no Affective propositions.

similar manner to the frequency with which he responds in a dissimilar manner.

To illustrate this procedure a simple example is worked through these three steps:

1. Let us assume that for a certain group of sessions there are a total of 1000 therapist Affective statements, 500 of which are followed by patient Affective statements. This yields us a .50 similar response.
2. In this same group of hours there are also 1000 therapist *non-Affective* statements, 250 of which are followed by patient Affective statements. This gives us a .25 dissimilar response.
3. Dividing the percentage of similar responses (.50) by the percentage of dissimilar responses (.25) we get a ratio of 2.0 which is the Index of Patient Sensitivity to Affect for that group of hours. This index tells us that the patient responded in a similar manner *twice* as often as he responded in a dissimilar manner. If the ratio were 1.0, it would mean that the patient responded in a similar manner *exactly as often* as he responded in a dissimilar manner. If the ratio were .5, it would mean that the patient responded in a similar manner only *one-half* as often as he responded in a dissimilar manner.⁶

The Index of Therapist Sensitivity is computed in the same way except that the word "patient" is substituted for the word "therapist" and vice versa.

Thus, if the Index of Patient Sensitivity is higher later in therapy than during the initial phases, it indicates that the patient is becoming more sensitive to the therapist statements. If the Index of Therapist Sensitivity increases from early to later hours it indicates that the therapist is becoming more sensitive to the patient statements. In order to examine change over time we grouped the sessions so far coded into four time periods: sessions one and two, sessions three through five, sessions six through eight, and two sessions taken from the third and fourth months of therapy. Then the Index of Patient Sensitivity and the Index of Therapist Sensitivity were computed for each time period for the three different dimensions of Primary System References, Evaluation, and Affect.

RESULTS II

Table 2 shows that for Primary System References both the Index of Patient Sensitivity and the Index of Therapist Sensitivity strikingly increase

⁶ There are several other possible ways of constructing an Index of Sensitivity from this type of data such as subtracting instead of dividing in step 3, or by comparing different types of responses to the same stimulus rather than comparing the effect of different stimuli on the same type of response as we do here. However, the method presented here was found to be the most sensitive and valid for our purposes.

TABLE 2
Primary System Sensitivity Over Time

	Indices of Primary System Sensitivity for:				
	Sessions 1-2	Sessions 3-5	Sessions 6-8	2 sessions from 3rd and 4th months	All sessions
Patient sensitivity	4.8	9.0	21.0	32.0	16.7
Therapist sensitivity	5.9	9.4	8.1	11.5	8.7

n = 9,314 statements.

from the earlier to later hours. Thus, in this case the increased similarity of behavior seems to be due to the increased sensitivity of both the patient and the therapist to each other. However, it should be noted also (a) that the patient sensitivity increases at a more rapid rate than that of the therapist, and (b) that the patient has a higher over-all average sensitivity.⁷

Table 3 shows that for Evaluative Propositions there is *no* increase in the Index of Patient Sensitivity nor in the Index of Therapist Sensitivity.⁸ Thus, in the case of evaluation, none of the above three hypotheses seem to apply, and the observed increase in correlations must be due to some other process. It is possible that there is a "delayed action" sensitivity which increases but which escapes detection at this microscopic level of analysis. In other words when the therapist gives an evaluative statement the patient's evaluative response may be delayed until several interactions later due to a lack of immediate comprehension or the necessity for some thought before responding appropriately, etc. If this is the case, such a staggered sensitivity would not manifest itself in these indices since they reflect only the immediately following response. However, we may note that the averages show the patient to be more sensitive on the whole than the therapist.

Turning now to our final category, Affective Propositions, Table 4 shows a slight increase in the Index of Therapist Sensitivity and a larger increase in the Index of Patient Sensitivity. This agrees with our previous finding that the Index of Patient Sensitivity increases at a faster rate than the Index of Therapist Sensitivity. However, the increases in both therapist and patient Affective Sensitivity are so small that we would suspect their importance if we did not examine each therapist separately. When we look at the indices computed for each therapist separately, as shown in Table 5, we note two quite distinct patterns. The indices for therapist A and therapist B con-

⁷ These patterns hold consistently for each of the therapists when the indices are computed for each therapist separately.

⁸ A detailed analysis of these indices computed for individual therapists and patients shows the same pattern of no change or inconsistent and minor changes over time.

TABLE 3
Evaluative Sensitivity Over Time

	Indices of Evaluative Sensitivity for:				
	Sessions 1-2	Sessions 3-5	Sessions 6-8	2 sessions from 3rd and 4th months	All sessions
Patient sensitivity	2.0	1.9	1.8	1.7	1.9
Therapist sensitivity	1.4	1.2	1.3	1.2	1.3

n = 9,314 statements.

sistently increase over time while the indices for therapist C and D remain about the same or actually *decrease*. Thus it appears that the increased similarity of behavior of therapists A and B and their patients is due to increasing sensitivity of both the patients and therapists while this is not true of therapists C and D since neither they nor their patients show any consistent increase. We believe that there is a valid explanation for this difference between the first and last two therapists. In an earlier study it was found that therapists A and B are more "active" therapists than the other two as measured in a variety of ways. (Using such indicators as number of propositions per hour, ratio of therapist to patient propositions, per cent of therapist propositions with "high informational stimulus value," etc.) (4) Thus it may be expected that such active therapists "teach" their patients to become more sensitive to affective propositions or requests for affective propositions. What might not be expected is that these active therapists themselves become more sensitive, while the more passive therapists do not.

Finally, one may ask why sensitivity differs both in magnitude and in rate of increase for these three dimensions. In comparing the sensitivity to Primary System References with the sensitivity to Evaluative and to Affective Propositions, we note a markedly higher sensitivity in the former than in the latter two dimensions. Not only does the sensitivity to Primary System Reference start high in the early hours but it also increases at a faster rate for both

TABLE 4
Affective Sensitivity Over Time

	Indices of Affective Sensitivity for:				
	Sessions 1-2	Sessions 3-5	Sessions 6-8	2 sessions from 3rd and 4th months	All sessions
Patient sensitivity	1.6	1.9	2.2	2.0	1.9
Therapist sensitivity	1.7	1.9	1.9	1.9	1.9

n = 9,314 statements.

TABLE 5
Affective Sensitivity over Time by Individual Therapist

Therapist	Index of:	Indices of Affective Sensitivity for:			
		Sessions 1-2	Sessions 3-5	Sessions 6-8	2 sessions from 3rd and 4th months
A	Patient * sensitivity	1.6	1.7	2.7	2.1
	Therapist sensitivity	1.2	1.8	1.9	3.1
B	Patient sensitivity	1.5	2.2	2.7	3.4
	Therapist sensitivity	1.5	1.9	1.9	2.4
C	Patient sensitivity	1.7	2.1	1.9	1.7
	Therapist sensitivity	2.2	2.1	1.5	.8
D	Patient sensitivity	1.8	1.8	1.7	.7
	Therapist sensitivity	1.9	1.9	2.4	1.1

n = 9,314 statements.

* The Index of Patient Sensitivity here represents the average score for the two patients of each therapist. The pattern is the same for the individual patients.

patients and therapists. For example, the Index of Patient Sensitivity to Primary System References in the later hours shows that patients gave similar responses thirty-two times as often as they gave dissimilar responses! This strikingly higher sensitivity may be related to the fact that Primary System References are based on specific substantive content while the other two dimensions are based on characteristics of statements unrelated to specific content. In other words, a proposition was coded as a Primary System Reference if there was reference to the concrete subject matter of therapy as a process; whereas a proposition was coded as Evaluative if it gave any kind of opinion, wish, or preference *regardless of subject matter* under discussion. Similarly, a proposition was coded as Affective if there was reference to any kind of feeling or emotion *regardless of subject matter* under discussion. Thus, the patient and therapist were probably more aware of whether they were responding in a similar or dissimilar manner along the substantive dimension of Primary System of Reference than they were aware of the similarity of their response along the more abstract dimensions of Evaluation and Affect. This difference in *awareness* of similarity of response may account for the striking difference in sensitivity.

SUMMARY AND DISCUSSION

An analysis of the communication between patients and therapists during 80 psychotherapeutic sessions yielded the following trends:

1. An increasing similarity between the patients' and therapists' verbal behavior along the following dimensions: Primary System References, Evaluative Propositions, and Affective Propositions. It was found that as therapy proceeded the patient and therapist behaved more similarly; i.e., during hours in which the therapist gave more Primary System References, the patient gave more Primary System References; during hours in which the therapist gave more Evaluative Propositions, the patient gave more Evaluative Propositions, etc.

2. An increasing sensitivity of both the patient and the therapist with regard to Primary System References made by the other, with the patient showing a faster rate of increase in sensitivity and a higher over-all sensitivity score.

3. A lack of any increase in sensitivity during therapy of either the patient or the therapist with regard to Evaluative Propositions. However, the patient has a higher average sensitivity score.

4. An increase in sensitivity over time with regard to Affective Propositions manifested by two of the therapists and their patients, but no increase in Affective sensitivity for the other two therapists and their patients. This was interpreted as being due to the fact that the two therapists showing increases were more "active" therapists than the two therapists showing no increases. It may well be that the more "passive" therapists will show increases at a later stage in therapy. Coding of these later sessions is now being planned in order to test this hypothesis.

In addition to the theoretical relevance of the above findings for specifying in which respects, to what degree, when, and why interacting individuals tend to become more alike, two "practical" implications may be discussed at this time. It appears that these findings lend some support to those who emphasize a more symmetrical relationship between therapist and patient.

We observed that in the affective dimension the patients of the "passive" therapists do not increase their sensitivity while the patients of the "active" therapists do increase in sensitivity. If an increase in sensitivity is associated with progress in therapy, one might argue that active therapists make progress with their patients faster than passive therapists.⁹

The second practical implication is related to the first: it may be that the Index of Sensitivity can be developed into an objective, reliable, and valid indicator of progress in therapy. It seems reasonable to assume that a minimum degree of sensitivity needs to be established between patient and therapist in order that effective communication may take place (3).

⁹ The crucial question, of course, is whether an increase in similarity and sensitivity on the part of patients and therapists indeed constitute "progress." To discuss this question will require another paper.

There are three lines of research which could grow out of these findings. One would be the application of this index to more cases of therapy and the attempt to relate it to the occurrence or absence of "progress" in therapy. Second, this index could easily be adapted for use with other small interaction systems whose communications can be recorded. Thus we could determine if, when, and how committee members, work team members, or friends become more sensitive toward each other. Such research could clarify and specify current hypotheses about the increasing similarity of interacting individuals. Third, one should examine to what extent the processes described in this paper are within the awareness of the participants or are outside it.

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Status and Contrastatus

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INTRODUCTION

Our object is to propose a formula to measure a positional aspect of the status of a person in an organization or a group, and investigate some of its ramifications. "Status" is a word with multiple connotations. We do not attempt to handle here questions involving status due to salary, material wealth, education, fame, age, or similar attributes but are only concerned with structural or positional status. Examples and terminology are frequently drawn from formal organization theory and concepts for precision, but this is not necessary. The status formulations of this paper are intended to be applicable to all relations involving a group of persons, including for example informal sociometric choice, family relations, love, respect, and communication as well as power or authority. We realize that our formula is only approximate and discuss its limitations in the last section.

Perhaps the most important concept to be presented is that of "contrastatus," which can be described intuitively as the amount of status weighing down on an individual from his superordinates. In fact, we shall see that in certain situations the contrastatus of a person is of greater significance in determining relative importance than the status.

We were originally motivated by the approach of (1): "An official wants to multiply subordinates, not rivals." The organization chart described in (1) replaces official *A* by the subgroup consisting of *A*, two subordinates called *C* and *D*, and two subordinates for each of them (thereby getting seven employees to do the work of one). This will be called a "standard organization" with 3 levels.

We also wish to avoid the "popularity contest" type of status index, mentioned and also avoided in (9), which would define the status of a person in an organization as the total number of his subordinates regardless of their levels. Further, we subscribe to the viewpoint of the opening sentence of (2): Recent developments in the study of leadership have been dominated by a concern for the "interactional" and "situational" factors which may define the leader's role and determine the leader's effectiveness.

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That paper then goes on to report the results of a study on laissez-faire, democratic, and autocratic leadership. These constitute the topic of a later section, which also considers the concept of contraleadership.

Definition: The status $s(A)$ of a person A in an organization Θ is the number of his immediate subordinates plus twice the number of their immediate subordinates (who are not immediate subordinates of A) plus three times the number of their immediate subordinates (not already included), etc.

This definition has the effect that the status of a person is maximized when he not only has as many subordinates as possible, but when these are as far below him as possible. In the next section we obtain an expression for the status of a person in terms of the status numbers of each of his immediate subordinates, when the organization is a "tree." We also explore, using the approach of directional duality (4), the organization obtained from Θ by reversing the directions of all the directed lines and call this the *contra-organization* to Θ , denoted Θ' . Then by the *contrastatus* $s'(A)$, of A in Θ we mean the status of A in Θ' . The sum of the status numbers of all the members of Θ , called the *gross status* of Θ , and the pair of numbers ($s(A)$, $s'(A)$) are studied. Peer groups are then taken up, and the last section discusses various problems.

RECURSION FORMULA FOR TREES

To derive the recursion formula which expresses the status of a person in a "tree-organization" in terms of the status numbers of his immediate subordinates, we require the following concepts. A *directed graph* or *digraph* (see (6) or (4)) consists of a set of points A, B, C, D, \dots and a prescribed set of (directed) lines written $A \rightarrow B$, $D \rightarrow A$, etc. We note that between any two points, both the directed lines $A \rightarrow B$ and $B \rightarrow A$ may occur. A (directed) *path* from A to E is a collection of (directed) lines of the form $A \rightarrow B$, $B \rightarrow C$, \dots , $D \rightarrow E$ where the points A, B, C, \dots, D, E are distinct. The *length* of a path is the number of lines in it. The *distance* from point P to point Q , written $d(P, Q)$, is the length of any shortest path from P to Q .

We now define the *structure* of an organization as the digraph whose points are coordinated to the persons in the organization and whose lines correspond to the directed lines in the organization chart. For example, the digraph of Figure 1 illustrates a standard organization chart with four levels and two branches per member.

For any person A in an organization, we say that P is a *subordinate* of A if there exists at least one path from A to P (in the digraph of the organization). We call P an *immediate subordinate* of A if $d(A, P) = 1$. For the sake of generality in the later discussion, we deliberately do not exclude the possi-

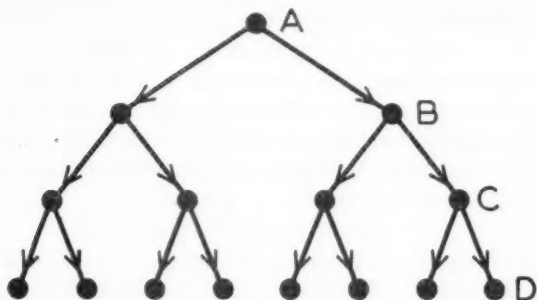


FIGURE 1

bility that two persons may be subordinates of each other. An organization in which this possibility is excluded is called a *hierarchy*. A *tree* is a hierarchy in which there do not exist two different paths from one point to another. Note that not all hierarchies are trees, for example, the three-person group whose lines are $A \rightarrow B$, $B \rightarrow C$, and $A \rightarrow C$; see Figure 3. A subhierarchy of an organization is a subgroup which is a hierarchy. For any person A in an organization, the *subhierarchy of A* consists of A together with all subordinates of A and all shortest paths along which A can exercise authority over these subordinates. The *superhierarchy of A* is defined similarly.

Let m be the maximum distance from A to any of his subordinates. For $k = 1, 2, \dots, m$, we call P a k -subordinate of A if $d(A, P) = k$. Thus a 1-subordinate is an immediate subordinate. Let a_k be the number of k -subordinates of A . Then the m -tuple (a_1, a_2, \dots, a_m) is called the *status vector* of A , and we denote it by $v(A)$. We are now ready to express the *status of A* in an organization operationally by the equation

$$(1) \quad s(A) = \sum_{k=1}^m k a_k.$$

Note that the status vector $v(A)$ of A completely determines the status of A .

It is clear that to every theorem or formula on status there corresponds a directionally dual statement on contrastatus. If the corresponding theorem is the same as the original theorem, it is self-dual. We denote the dual of Theorem 1 below by Theorem 1', the dual of equation (2) by equation (2'), etc. For completeness we define the distance $d(A, A)$ from a member to himself as zero.

Theorem 1: The status of A can also be written in the form:

$$(2) \quad s(A) = \sum d(A, P),$$

where P ranges over all the subordinates of A .

Proof: By equation (1),

$$s(A) = a_1 + 2a_2 + 3a_3 + \dots + ma_m.$$

But a_1 , the number of immediate subordinates of A , is the same as the sum of the distances from A to each of his 1-subordinates. Similarly, $2a_2$ is the sum of the distances from A to each of his 2-subordinates, etc.

From duality considerations we have without further proof:

Theorem 1': The contrastatus of A is given by

$$(2') \quad s'(A) = \sum d(P, A),$$

where P ranges over all the members of Θ having A as a subordinate.

There is a connection between formula (2) for status and the matrix of distances of a digraph treated in (14). Let A_1, A_2, \dots, A_n be the members of an organization Θ . Let D be the matrix (d_{ij}) in which the i, j entry d_{ij} is the distance $d(A_i, A_j)$. Then D is called the *matrix of distances* of Θ .

Corollary: The status of member A_i is the sum of the elements in the i th row of the matrix of distances D ; the contrastatus of A_i is the sum of the entries in the i th column.

In (14), an algorithm is provided for computing the matrix D , given the structure of the organization Θ , however complex. By means of this corollary, the numbers $s(A_i)$ and $s'(A_i)$ can also be rapidly computed.

In order to state the next theorem concisely we require the concept of a subtree of a person in an organization. By definition, an organization is a tree if there is exactly one path from a person to each of his subordinates. A *subtree* of an organization is a subset of the points and lines which is a tree. A *subtree of A* is any subtree T of Θ containing A and all his subordinates such that the distance from A to each of his subordinates is the same in T as it is in Θ . Note that a person A need not have a unique subtree. For if his hierarchy is as shown in Figure 2a, then each of Figures 2b and 2c is a subtree of A .

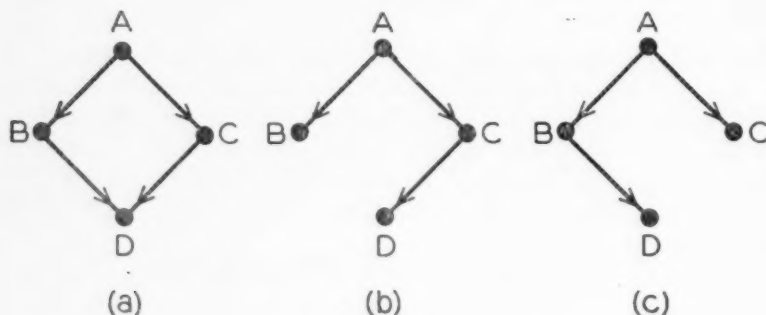


FIGURE 2

Theorem 2: The status of a person A is the sum of the number of his subordinates and the status in any subtree of A of each of his immediate subordinates.

Proof: Symbolically, let B_1, B_2, \dots, B_q (where $q = a_1$) be the immediate subordinates of A , let $n(A)$ be the total number of subordinates of A , and let T be any subtree of A in Θ . Then we derive the result

$$(3) \quad s(A) = n(A) + \sum_{i=1}^q s_T(B_i),$$

where $s_T(B_i)$ is the status of B_i in T . Clearly $s(A)$ and $s_T(A)$ are equal, by equation (1). In equation (1), we separate the first term from the remaining terms to get

$$s(A) = \sum_{k=1}^m k a_k = a_1 + \sum_{k=2}^m k a_k.$$

We then use the fact that $k = (k-1) + 1$ to write

$$s(A) = a_1 + \sum_{k=2}^m [(k-1) + 1] a_k.$$

Then combining the term a_1 with the last sum, we obtain

$$(4) \quad s(A) = \sum_{k=1}^m a_k + \sum_{k=2}^m (k-1) a_k,$$

where the first term of the right-hand member is $n(A)$.

We now work with the second sum in equation (3). By definition, a_k is the number of k -subordinates of A . But in any subtree of A , the collection of all k -subordinates of A is identical with the set of all the $(k-1)$ -subordinates of each of the 1-subordinates of A . Further, since we are considering a subtree of A , the sets of $(k-1)$ -subordinates of any pair B_i and B_j of 1-subordinates of A are mutually exclusive. Let $v(B_i)$, the status vector of B_i , be denoted by $(b_{i1}, b_{i2}, b_{i3}, \dots)$. Then we have

$$\sum_{k=2}^m (k-1) a_k = \sum_{k=2}^m (k-1) \sum_{i=1}^q b_{i, k-1},$$

whence by interchanging the order of summation,

$$(5) \quad \sum_{k=2}^m (k-1) a_k = \sum_{i=1}^q \sum_{k=2}^m (k-1) b_{i, k-1}.$$

Now for convenience we replace in (5) the index of summation k by the new index j such that $k = j+1$ or, equivalently, $k-1 = j$. Then (5) becomes:

$$\sum_{k=2}^m (k-1) a_k = \sum_{i=1}^q \left(\sum_{j=1}^{m-1} j b_{ij} \right),$$

in which the summation in parentheses in the right-hand member is precisely $s_T(B_i)$ by (1). Therefore,

$$(6) \quad \sum_{k=2}^m (k-1) a_k = \sum_{i=1}^q s_T(B_i),$$

and substituting (6) into (4), we obtain the recursive result of equation (3).

We now illustrate both equations (1) and (3) using Figure 1 (which is a tree). Equation (1) gives

$$s(A) = (1)(2) + (2)(4) + (3)(8) = 34,$$

while from (3)

$$s(A) = 14 + s(B_1) + s(B_2) = 14 + 10 + 10 = 34.$$

Corollary: If Θ is a tree, then equation (3), with $s_T(B_i)$ replaced by $s(B_i)$, holds in Θ .

Proof: When Θ is a tree, the subhierarchy of A is the unique subtree of A .

We now demonstrate with Figure 3 the reason for the condition of Theorem 2 that the status of the immediate subordinates of A be restricted to a subtree of A .



FIGURE 3

Here $s(A) = 2$, $s(B) = 1$, $s(C) = 0$, and $n(A) = 2$. If we substitute these numbers into equation (3), we obtain the false statement $2 = 2 + (1 + 0)$. By definition of a subtree of A , the only subtree of A in Figure 3 consists of the lines $A \rightarrow B$ and $A \rightarrow C$. For this subtree, equation (3) obviously holds.

STANDARD ORGANIZATIONS

Probably the most frequently occurring kind of organization chart is a "standard organization" which we now describe precisely. These occur not

only in the context of organization theory, but also in probability theory, combinatorial analysis, logic, and switching theory. Every standard organization is a tree. Figure 1 shows a standard two-branching organization with four levels.

A *standard organization* consists of a leader A who has b immediate subordinates, each of whom also has b immediate subordinates, and so on as in Figure 1, for $b = 2$. If the maximum distance from A to any other person is m , then we say that we have a standard organization with $m + 1$ levels. We further say that A is at *level* m , each of his 1-subordinates B is at *level* $m - 1$, and each 1-subordinate of B is at *level* $m - 2$, and so on, with *level* 0 being the lowest level. We derive a formula for $s_{b,k}$, the status of a person at level k in a standard organization Θ_b in which each person above *level* 0 has exactly b immediate subordinates. Then the values $k = 0, 1, 2, \dots, m$ give the status of all the persons in Θ_b . We note that this formula does not depend on the total number of levels in Θ_b .

By equation (1),

$$(7) \quad s_{b,k} = b + 2b^2 + 3b^3 + \dots + kb^k.$$

Hence the recurrence relations for status in a standard organization are:

$$(8) \quad \begin{aligned} s_{b,0} &= 0 \\ s_{b,k} &= s_{b,k-1} + kb^k. \end{aligned}$$

Using elementary calculus, the series in equation (7) can be summed to obtain $s_{b,k}$ in closed form:

$$(9) \quad s_{b,k} = \frac{b}{(b-1)^2} \left[1 - (k+1)b^k + kb^{k+1} \right].$$

For the special case $b = 2$, this becomes

$$(10) \quad s_{2,k} = 2 \left[1 - (k+1)2^k + k2^{k+1} \right];$$

from which the following table is calculated:

k	0	1	2	3	4	5	6	...
$s_{2,k}$	0	2	10	34	98	258	642	...

Similarly, for $b = 3$ we find:

k	0	1	2	3	4	5	...
$s_{3,k}$	0	3	21	102	426	1641	...

The standard three-branching organization with $m = 2$ is shown in Figure 4.

Figure 5 shows a variation of a standard two-branching organization in which neighboring members in the chart have mutual influence. A diagram



FIGURE 4

similar to this is given as "Exhibit 3" in Likert (12). In this figure, a double-arrowed line between a pair of points represents two directed lines, one in each direction.

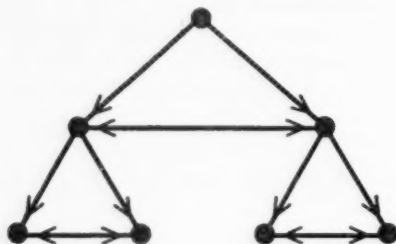


FIGURE 5

Let t_k be the status of each person at level k in such an organization. Clearly the status differential between the top two levels is smaller here than in a standard organization. This fact is illustrated in the following table for $m = 4$, in which $t_1 = s_{2,4} = 98$.

k	0	1	2	3	4
t_k	1	7	27	83	98

In this sense, Figure 5 represents a "more democratic" organization than the standard and may be more efficient in the performance of certain tasks. We note that even level-0 members have positive status here.

MAXIMAL AND MINIMAL STATUS ARRANGEMENTS

If we are given the auxiliary condition that a person A is to have a fixed number $n = n(A)$ of subordinates, how can we arrange these n people under A so that the status of A is minimized or maximized (respectively)? It turns out that there is a unique answer to each question, which we first illustrate for $n = 4$, in Figure 6, and then prove for any value of n .

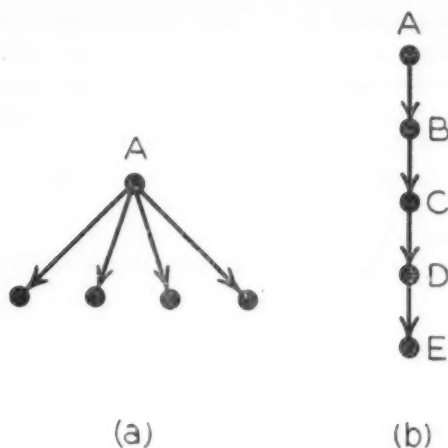


FIGURE 6

Figure 6a depicts an organization in which $s(A) = 4$, the minimal status of a person with 4 subordinates, while Figure 6b shows $s(A) = 10$, the maximal status of A with $n(A) = 4$.

Theorem 3: Let $s(n, \min)$ and $s(n, \max)$ be the minimal and maximal status of a person with exactly n subordinates. Then we have

$$(11) \quad s(n, \min) = n,$$

$$(12) \quad s(n, \max) = n(n+1)/2.$$

Further, the organizational structure which minimizes the status of A is that in which A has n immediate subordinates (as in Figure 6a), while the maximal status of A is attained in an organization consisting of exactly one path initiating at A (as in Figure 6b). For any person B with exactly n subordinates, $n \leq s(B) \leq n(n+1)/2$.

Proof: We first consider equation (11). It follows at once from equation (3) that $s(n, \min) \geq n$. On the other hand an organization in the form of Figure 6a has $s(A) = n$. Hence $s(n, \min) \leq n$. Since $s(n, \min) \geq n$ and $\leq n$, we see that equation (11) is valid.

In order to prove equation (12), we call the n subordinates P_1, P_2, \dots, P_n . Then by equation (2) we have

$$s(A) = \sum_{j=1}^n d(A, P_j).$$

Clearly, the status vector (b_1, b_2, \dots, b_m) of any person B has the property that if a component $b_j = 0$, then all later components b_k , with $k > j$, are also zero. Hence we see that the unique status vector giving maximal status is of the form $(1, 1, 1, \dots, 1)$ and is of length n . This is precisely the form of Figure 6b. Using equation (1), we therefore find

$$\begin{aligned}s(n, \max) &= 1 + 2 + 3 + \dots + n \\ &= n(n+1)/2\end{aligned}$$

which proves equation (12).

The last sentence of the theorem is an immediate corollary of equations (11) and (12).

THE GROSS STATUS OF AN ORGANIZATION

Let A_1, A_2, \dots, A_n be the n members of organization Θ . Then $s(\Theta)$, the gross status of Θ , is defined by:

$$s(\Theta) = s(A_1) + s(A_2) + \dots + s(A_n).$$

The gross contrastatus of Θ is analogously given by

$$s'(\Theta) = s'(A_1) + s'(A_2) + \dots + s'(A_n).$$

Theorem 4: The gross status of any organization is equal to its gross contrastatus, i.e.,

$$(13) \quad s(\Theta) = s'(\Theta).$$

Proof: By the corollary to Theorem 1, $s(\Theta)$ and $s'(\Theta)$ are both equal to the sum of all the elements in the matrix of distances.

The following question is of a sort often encountered in switching theory under the name of "synthesis problem," namely, given a certain set of conditions to be satisfied, find the network which is best. Given that Θ is to have n members, what is the structure of Θ if $s(\Theta)$ is to be (a) minimal, (b) maximal? The minimal structure is given by the digraph, called *totally disconnected*, with n points and no lines, for which obviously $s(\Theta) = 0$. In the language of groups, all members are isolates.

To specify the maximal structure, we need the definition of a *cycle*, i.e., a path from A to E together with the line $E \rightarrow A$.

Theorem 5: Among all organizations Θ with n members, there is a unique structure for which $s(\Theta)$ is maximal. The digraph of this structure consists of n points and n lines arranged in a cycle.

Proof: By Theorem 3, the maximal status of a single individual A is attained in an organization consisting of exactly one path from A . Hence $s(\Theta)$ is maximal when every member of Θ enjoys this situation. This results from Figure 6b, for example, by adjoining the line $E \rightarrow A$ to form a cycle, as shown in Figure 7.

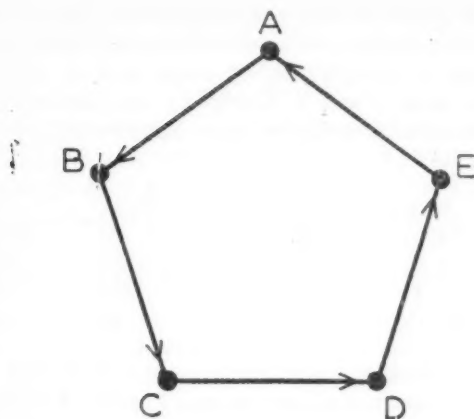


FIGURE 7

THE STATUS PAIR

By the *status pair* of numbers for any member A of Θ , we mean the ordered pair $(s(A), s'(A))$. In Figures 8a and 8b we write the status pair near representative points of the standard organizations $\Theta_{2,3}$ and $\Theta_{2,4}$ respectively.

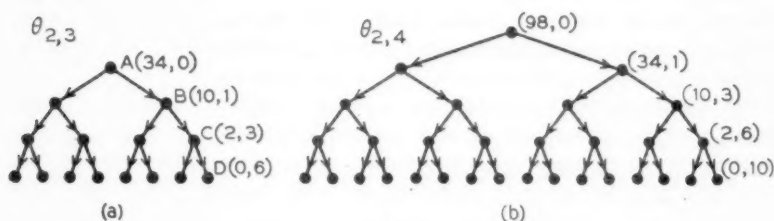


FIGURE 8

The dual indices of status and contrastatus can be combined to give a single index which is the resultant or *net status* of A :

$$(14) \quad s_n(A) = s(A) - s'(A).$$

Theorem 4 shows that the sum of the net status numbers of every member of Θ is zero, i.e., the net status of every organization is zero. For certain purposes the net status of a person in a group may be a better measure of "prestige" than the status.

At what level in a standard organization is the net status of a member equal to zero? An examination of Figure 8 shows that in the organization $\Theta_{2,3}$, the net status is zero just slightly above level 1, while in $\Theta_{2,4}$, $s_n(A) = 0$ between levels 1 and 2. Continuing this calculation for two-branching organizations without drawing their digraphs, we find the following table of status pairs:

Level	$\Theta_{2,3}$	$\Theta_{2,4}$	$\Theta_{2,5}$	$\Theta_{2,6}$
3	(34, 0)	(34, 1)	(34, 3)	(34, 6)
2	(10, 1)	(10, 3)	(10, 6)	(10, 10)
1	(2, 3)	(2, 6)	(2, 10)	(2, 15)
0	(0, 6)	(0, 10)	(0, 15)	(0, 21)

Thus in $\Theta_{2,6}$, the net status of a member is zero exactly at level 2. This is intuitively plausible because of the large number of persons in levels 0 and 1. One interpretation of zero net status might be realized by a foreman who has mixed feelings regarding management and workers, whereas positive and negative net status would indicate primary loyalty to management and labor respectively.

Other combinations of status and contrastatus are their sum $s + s'$, their product ss' , and their quotient s/s' . Both the sum and the product are different indicators of the degree of status-contrastatus interaction of a member of an organization. Referring to Figure 8, we see that the sum is always maximal at the leader position, and for $\Theta_{2,3}$ and $\Theta_{2,4}$ the product is maximal for the immediate subordinates of the leader. Further, the leader is the only person with infinite status quotient, and the level 0 members or *contraleaders* are the only ones with zero status quotient.

We illustrate how a particular role in an organization is reflected in these different status indices with an extreme but frequently occurring example. Consider E, an "expert" or "consultant" who is responsible only to the leader but does not actually supervise any other member. Since $s(E) = 0$ and $s'(E) = 1$, we see that E has negative net status, -1 , while $s + s' = 1$ and $ss' = s/s' = 0$. His sum and product demonstrate small status-contrastatus interaction. In spite of his zero status quotient, the prestige of the expert is clearly seen in his very small contrastatus. This is a striking argument for the inadequacy of status alone (without contrastatus) for purposes of organizational description. One comment on actual organizational practice which involves preservation of level or of contrastatus of a person while decreasing the status is that in certain situations members are transferred laterally.

How can one compare the status of people in different organizations? In a very large structure, even someone slightly above level 0 may have a fairly

large status number. Two normalizing factors suggest themselves, namely $s(\ominus)$ and $s(n, \max)$. We define the *relative status* of A by the equation

$$(15) \quad s_r(A) = s(A)/s(\ominus).$$

Then the sum of the relative status of all the members, i.e., the gross relative status, is 1. Similarly, dividing $s(A)$ by $n(n+1)/2$ gives a number which shows the proportion of status A has, compared to the status he would have if he were to arrange his subordinates as in Figure 6b.

STRUCTURAL DEMOCRACY, AUTOCRACY, LAISSEZ-FAIRE

We note that there is no pretense being made here that any personal qualities of leadership are taken into account in discussing leaders or democracy, autocracy, and laissez-faire. One can regard the adjectives "positional" or "structural" as attached to these nouns just as we consider it as belonging to the word "status" throughout this paper.

We propose the following operational definitions. If there is a unique person in \ominus with maximal status, he is called *the leader*; if there is more than one such person, each is called *a leader*. If A is the leader of \ominus , and B is a member of \ominus whose status is second only to $s(A)$, then the *leadership status differential* of \ominus is $s(A) - s(B)$. A *completely democratic organization* is one in which each member can influence every other member. In a *completely laissez-faire organization*, no one influences anyone else. A *completely autocratic organization* is standard one-branching, i.e., each member above level 0 has exactly one immediate subordinate, as in Figure 6b. An organization is somewhat democratic, autocratic, or laissez-faire to the extent to which it approximates the above extreme organizational structures. Further, in these extreme structures, only the autocratic one has a leader, using the maximal status definition.

However, one person in a completely democratic group may be designated as having some other attribute, say expertness, as in the following quotations (cf. *Modern Industry*, Sept. 15, 1950, "How Democratic Can Industry Be?").

When the group makes the decision by general consent, with leader as expert, results are best. In democratic leadership, decisions are made on the basis of group discussion. The group accepts responsibility and puts forth its best effort. . . .

From the same source, we have:

In the laissez-faire situation, . . . each individual goes in his own direction; he imposes on himself whatever controls he thinks best. The leader is simply one of the group.

and

In autocratic control of a group, the leader . . . gives orders, makes decisions. . . . The group is told what it is to feel, think, and do.

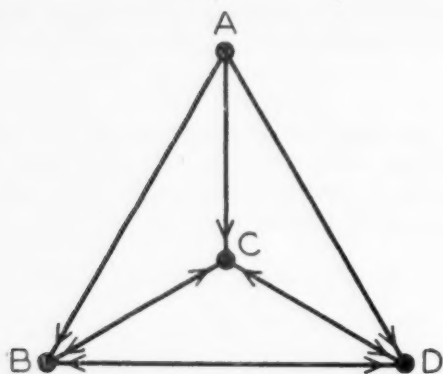


FIGURE 9

We combine these ideas to propose the digraph of Figure 9 as a democratic organization with a leader. Here the leadership status differential is as small as it can be and still be positive; for $s(A) = 3$ and $s(B) = s(C) = s(D) = 2$. For completeness, Figure 10a shows the totally disconnected digraph of four points which represents the completely laissez-faire organization with four members, and Figure 10b shows the digraph of the completely democratic four-person group.

The *complement* of a digraph is that digraph with exactly the same set of

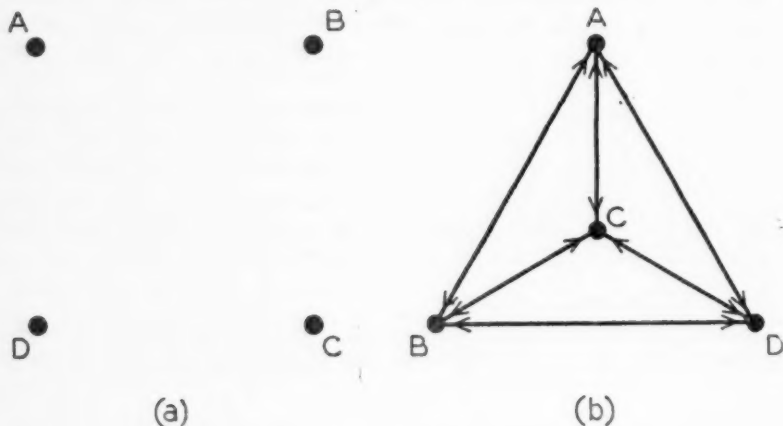


FIGURE 10

points in which a line $A \rightarrow B$ appears if and only if it does not occur in the original digraph. Thus the two digraphs of Figure 10 are complementary. Using the language of existential duality (4), this means that *laissez-faire* is "undemocracy." Similarly, the complement of Figure 9 represents the four-person group with lines $B \rightarrow A$, $C \rightarrow A$, and $D \rightarrow A$. This is a group in which B , C , and D are anarchically related, and A is a "scapegoat" or contraleader.

We show by an example that the adjunction of even one more line to an organization can alter the status distribution considerably. The standard organization of Figure 1 contains 15 persons at four different levels. In this organization

$$s(A) = 34, s(B) = 10, s(C) = 2, \text{ and } s(D) = 0.$$

Consider the organization Θ obtained by adding line $D \rightarrow A$ to Figure 1. Clearly, the only persons whose status is changed by the addition of this line are B , C , and D . Since their new status vectors in Θ are

$v(D) = (1, 2, 4, 7)$, $v(C) = (2, 1, 2, 3, 6)$, and $v(B) = (2, 4, 1, 1, 2, 4)$, we see that their new status members are $s(D) = 45$, $s(C) = 52$, and $s(B) = 51$. Thus the person C , whose status in Figure 1 is only 2, emerges as the leader in Θ , with B a very close second. Tannenbaum (15) proposes four simple prototypes for the study of the distribution of control in an organization:

1. The democratic model—control increases as one goes down the hierarchy.
2. The autocratic model—control decreases as one goes down the hierarchy.
3. The *laissez-faire* model—control is low for all hierarchical levels.
4. The polyarchic model—control is high for all hierarchical levels.

We recognize these four distinctions but differ slightly with this terminology. To us, the "polyarchic model" is democratic while the above "democratic model" is inversely autocratic rather than democratic.

AUTOMORPHIC GROUPS AND PEER GROUPS

Two persons in Θ are *peers* if they have equal status. Obviously if two persons in an organization have the same status vectors, then by equation (1) they are peers. The converse of this statement is not true. This is shown by the organization of Figure 11. Here the status vectors of A and B are different, for $v(A) = (2, 1, 1, 0)$ and $v(B) = (1, 3, 0, 0)$. However, by equation (1), we see that $s(A)$ and $s(B)$ are both 7, so that A and B have equal status.

The organization of Figure 12 has even fewer persons and also has two persons A , B with different vectors $(1, 1, 0)$ and $(3, 0, 0)$ but equal status, 3.

It can easily be shown that there are no three-person groups with this property.

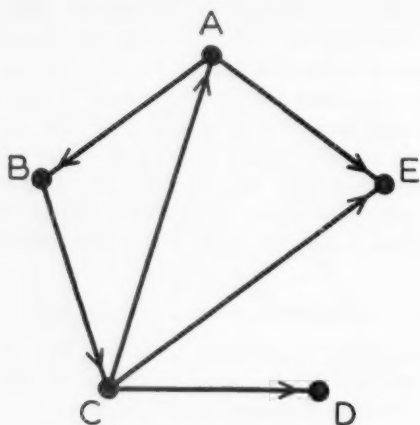


FIGURE 11

A *peer organization* or *peer group* is one in which all members have equal status. Examples of peer groups have already been given in Figures 10a, 10b, and 7 where the status of each member is 0, 3, and 10 respectively. The paper (13) uses exactly this definition of peer organization in making the following fine distinction:

It appears that legislative and administrative control processes can be more successfully delegated to groups composed of equal status members than sanction processes.

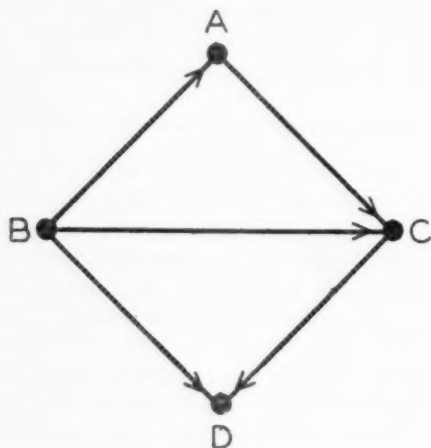


FIGURE 12

In order to define an automorphic group, which is related to a peer group, we require some technical concepts from digraph theory (6). Two digraphs are *isomorphic* if there is a one-to-one correspondence between their sets of points which preserves directed lines. An *automorphism* of a digraph is an isomorphism with itself. Two points of a digraph are *similar* if there is an automorphism sending one point onto the other. We then say that two persons in an organization Θ are *automorphic* if they correspond to similar points in the digraph of Θ . We may now define an *automorphic group* as one in which every pair of members are automorphic. Thus an automorphic group is coordinated to a digraph in which every pair of points are similar. Automorphic groups are studied in the context of social power in the paper (5).

It can easily be shown that all members of an automorphic group have the same status vector. Therefore it is clear that *every automorphic group is a peer group*. The converse of this assertion is not true.

Theorem 6: Not every peer group is automorphic.

Proof: The following counterexample due to E. F. Moore is, in our opinion, the smallest peer group which is not automorphic.

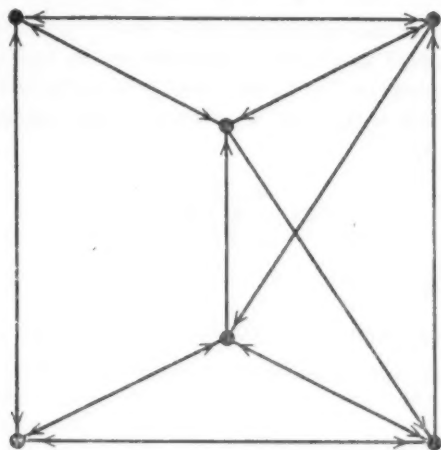


FIGURE 13

There is a simple sufficient condition for a group to be automorphic. We call two numbers A and B of Θ *neighbors* if $d(A, B) = 1$ or $d(B, A) = 1$.

Theorem 7: If any member of Θ is automorphic to all his neighbors, then Θ is automorphic.

The proof using mathematical induction and the mathematical theory of groups is straightforward and will not be given here.

PROBLEMS

Other Status Formulas

Katz (9) proposes a status index which "allows for *who* chooses as well as how many choose." The status formula of equation (1) accomplishes the same qualitative purpose by taking the distance between members into account. However, it is open to improvement and modification to make it more realistic empirically. The objection can be made that a person with 40 low-level subordinates (it is easy to supply examples, e.g., the head of the secretarial pool) does not actually have more "status" than the person with fewer high-level subordinates, even though equation (1) does give him (or her) more. This can be answered by weighting the members of Θ , say by the level number or by the status number given by equation (1) or by some other criterion. In any case, if $w(A)$ is the weight assigned to each number A , then the weighted status $ws(A)$ can be obtained by modifying equation (3) to read:

$$(16) \quad ws(A) = \sum d(A, P) w(P),$$

where P ranges over the subordinates of A in Θ . If we particularize this formula to a standard two-branching organization Θ_2 and take the weight $w(P)$ equal to the level of P in Θ_2 , then level 0 subordinates do not add anything to a member's status, and we obtain for the weighted status of a person A in level k :

$$(17) \quad ws(A) = \sum_{j=1}^{k-1} j(k-j) 2^j.$$

Status and Control

Two relevant quotes on control are from Likert (11, p. 16):

Management textbooks emphasize authority and control as the foundation of administration.

and from Tannenbaum (15, p. 545):

The control graph (hierarchical levels vs. amount of control) illustrates the importance of two distinct aspects of control in organizations: the distribution of control and the total amount of control.

We assume that the amount of control A has over his subordinates decreases with the distance from A . Thus he may have complete control over his immediate subordinates, "half-control" over his 2-subordinates, etc.

Then a formula for $c(A)$, the amount of control A has in Θ , is given using the notation of equation (1) by

$$(18) \quad c(A) = \sum_{k=1}^m ka_k/2^k.$$

One can then ask the synthesis type of question: Which organizational structures give the leader the best combination of maximal status and maximal control?

We note that with this formulation, control is a form of weighted status!

Matrix Formula for Status

Both Katz (9) and Kendall (10) have obtained matrix formulas for their status indices. Is there a convenient matrix formula for $s(A)$ which gives the status of every member in an organization, with one calculation? A circuitous answer to this question has been found by Ross and Harary (14) where an algorithm for finding the matrix of distances of a digraph is given. The row sums of this matrix then gives $s(A)$ for every A in Θ . The question raised here asks if there is a more direct way to find the status of everyone in Θ .

Formal and Informal Status

In Likert (11, p. 3), we find:

These studies also showed that the workers had developed an "informal organization" which differed from the "formal" or organization-chart organization.

We have been discussing mainly formal organizations Θ here rather than the informal one which is also present in each group.

Does a given formal organization chart tend to induce a certain kind of structure in the corresponding informal organization? In particular, what social power organizations are induced by autocratic, democratic, and laissez-faire types of formal organizations?

One can easily extend the concept of subordinates of members of Θ to subordinates of subgroups of Θ . This would lead to a status formula, similar to equation (1), for the subgroups of Θ . An "approach to the description of organization through data on communication" posed by Jacobson and Seashore (7) involves a combination of informal or perceived status with the status of subgroups. One can ask the general question: What role do subgroups play in the determination of informal status?

Synthesis Problems

Synthesis problems in organization theory ask which structures are best suited to solve optimally certain types of problems, e.g., to maximize productivity (as in (12)). Experiments have been conducted which show that the "centrality" of an individual in a communication network plays a role in his contribution to a group problem-solving situation (see (6)), and verifies that the most central person tends to assume leadership. The transitivity of the tendency to maintain tight control in Θ is reported in (8) as well as an inverse variation between control and productivity.

An Application

As an illustration of status in other fields, one may cite the "publication status" as some sort of index of creativity. The first-order references can be considered as the immediate subordinates of a paper; the second-order references as the 2-subordinates, etc. (It has been suggested that when an author refers to his own papers, these should not be counted.) A first approximation to this publication status idea is found in (3), p. 56:

By a complicated nominating procedure 150 "significant contributors" to psychology were selected. In addition 474 "other highly visible persons" were chosen. . . . A correlation between the number of votes received and number of journal citations was computed. A correlation of 0.67 was found. This was the highest correlation among four variables correlated.

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Integration and Conflict in Self-Other Conceptions as Factors in Mental Illness

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Recently self, or role theory as initiated by Baldwin (1), Cooley (5), Mead (10), and others has been used by sociologists, social psychologists, and psychiatrists as a frame of reference for the study of mental health and mental illness (2, 3, 6, 7). According to this general orientation, a person's conceptions of himself in relation to others significant in his environment arise out of interpersonal role-taking processes. In this interpersonal process interacting persons internalize the cultural and social norms which are valued by the group and thereby define themselves and one another in terms of these norms. The resulting self-other concepts become major factors governing the behavior of each group member. This theory suggests that the greater the disparity in self-other concepts (the way in which persons view themselves and are viewed by others), the greater the impairment in role functioning and in the ability to maintain adequate interpersonal relationships with others (4). In the extreme instance the person's appropriate self-other perceptions give way to private, distorted ones resulting in malfunctioning and often bizarre behavior. From this point of view aberrant behavior may be said to be a manifestation of a failure in the interpersonal role-taking process.

In this paper an attempt is made to test the salient aspects of role or self theory with regard to psychiatric patients. Specifically, this paper deals with the varying patterns of convergences and disparities in self-other profiles of hospitalized mental patients. On the one hand, the chief concern is with the patient's conception of himself and significant other persons in his life, and on the other, the reciprocal conceptions that these significant others have of him. The major problem is that of making valid generalizations about the relationship between the characteristics of these self-other conceptions and mental health or illness.

On the basis of this general role perspective a number of research hypotheses were formulated. Some of the more directly salient of these as applied to mental illness are:

1. Admission to a mental hospital is associated with wide discrepancies between patient's image of self and ideal.
2. Admission to a mental hospital is associated with discrepancies between patient's definition of self and others' definition of him.

a. As a result of differing orientations and training, therapist and nurse view the admitted patient differently from the way he views himself and also differently from the way the patient's relatives see him.

3. Admission to a mental hospital is associated with discrepancies between patient's definition of others and others' definitions of themselves.

METHOD

This study was conducted at the Columbus Psychiatric Institute and Hospital. This institution is a short-term, intensive-therapy, research and training center. Patients are usually referred by private physicians and with few exceptions are admitted on a voluntary or sign-in basis. As part of the routine intake procedure on each of the five hospital wards (three for females and two for males), 140 of the 302 patients admitted in a four-month period were selected at the discretion of ward personnel as participants in the study largely on the basis of being capable of completing the instruments. These 140 patients were found to typify the hospital population in most respects.¹ They were, however, the less seriously disturbed and confused patients as indicated by the more frequent diagnoses of psychoneurosis and personality trait disorders and the less frequent diagnosis of the psychoses, particularly schizophrenia. There were only half as many psychotics among the 140 patients as in the general hospital population (31 versus 63 per cent) and the respective percentages for the psychoneuroses and personality trait disorders were 43 and 26 in this sample and 20 and 17 in the hospital.

During the first three or four days of his hospitalization, each subject recorded a series of self- and other conceptions by means of an Interpersonal Check List (ICL). In either one or two sittings, the patient used the ICL to describe himself, his ideal self, and his retrospective self. When applicable, he also described his spouse, father, and mother, and his ideals for these roles. The nurse most familiar with the patient ($N = 84$) and the patient's therapist (in each instance a psychiatric resident at the hospital) used the same instrument to describe the patient. There were 58 such descriptions of patients by therapists. Finally, the spouse ($N = 42$) and parents and relatives ($N = 22$), when available, each described the patient and themselves on the ICL.

¹ The mean age of the patients was thirty-eight years and their average hospitalization period was two months. Over 72 per cent were first admissions, nearly 90 per cent were voluntary admission cases, 42 per cent were male, all but five were white, and 86 per cent were urban residents. Some 18 per cent had a grade-school education or less while 16 per cent either attended or graduated from college. Nearly 46 per cent were in the white-collar or skilled craftsman occupations and, at the other end, over 20 per cent were jobless. (In the case of married females, the occupation of the husband was used for purposes of classification).

The ICL, or Interpersonal Check List, was developed by a team of psychologists at the Kaiser Foundation Hospital in Oakland, California, for clinical and research purposes (8). It is currently being utilized by one of the authors as an instrument for evaluating the integrative quality of marriage relationships among young married couples (9).

The ICL contains 128 descriptive adjectives or short phrases about qualities of personality. These items are designed to measure 16 variables of personality centering around two major axes—dominance-submission and love-hostility. In addition to the major axes, all 16 variables of personality are arranged on a circular continuum so that the correlation between any two is a decreasing function of their separation on the perimeter of the circle. The intervariable correlation of the octants for male outpatients in California was found to range from $+.56$ for the two closest variables to $+.06$ for the most distant (8).

The average test-retest reliability of the ICL has been found to be relatively high. For 77 obesity patients at the Kaiser Foundation Hospital it was $+.78$ using octant scores (8). Norms based on psychiatric clinic cases are also available for comparative purposes and reference to them is made throughout this paper.

The 128 ICL items were presented alphabetically to the respondents and the raw, unweighted responses were analyzed in terms of a pattern analysis (i.e., general profile of responses). Four sets of scores were derived: the number of items endorsed as being descriptive of self, the dominance-submission and love-hostility vector mean scores, and the vector intensity scores. In each instance the greatest interest was in the discrepancies between comparable scores as, for example, those between self and ideal self, patient and physician, and patient and spouse. As many as 26 such difference patterns were obtained. Both the initial profiles and the difference pattern profiles were also analyzed in terms of diagnosis, course of treatment, and socioeconomic variables.

FINDINGS

Before discussing the findings, it is worth noting that the 140 patients in this study (59 male and 81 female) did not differ either in profile or statistically (using the vector mean scores) from the 86 male and 152 female psychiatric outpatients used by the Leary group in one of its early studies (8). They were found to differ, however, from a normal and noncomparable (e.g., age) population of 112 male and 112 female respondents in a study by Mangus in Miami County, Ohio (9). At least in this respect, then, the ICL seems to have some discriminating power.

Self-ideal Comparisons

In line with expectations, both the male and female patients defined themselves as being extremely different from the way they would like to be (ideal self), the way they used to be (retrospective self), and from the way they

FIGURE 1

Vector Mean Profiles of Current and Ideal Concepts of Self of Male and Female Patients



KEY: A = Self-concept, male patients
 B = Self-concept, female patients
 C = Ideal concept, male patients
 D = Ideal concept, female patients
 E = Retrospective concept, male patients
 F = Retrospective concept, female patients

perceive their spouses, fathers, and mothers (see Figure 1). It is particularly significant that both the male and female respondents portray their ideal selves as being outside the normal, standardized range for nonpsychiatrically ill persons. The main difference in the self-ideal images was in the area of dominance-submissiveness. The patients viewed themselves as modest, self-effacing, dependent types and were, as will be indicated, so viewed by significant others. As their ideal, however, they selected what is perhaps the most culturally acceptable image, i.e., the domineering, managerial, forceful, self-confident, responsible but considerate person. This tendency, also as anticipated, was only slightly more pronounced for the male than for the female patients.

The patients' retrospective self-image fell almost exactly between the self- and ideal conceptions except in the case of the females who tended to idealize their former selves on the love dimension and saw themselves as formerly being more responsible, agreeable, cooperative, and considerate persons than they presently were. If, as suggested by some, discrepancies between former, present, and ideal images represent the "insight" component, then these patients were far from lacking in insight and hence at the level of conscious description are probably, from this point of view, not nearly so psychiatrically impaired as their symptomatology and institutionalization would indicate.

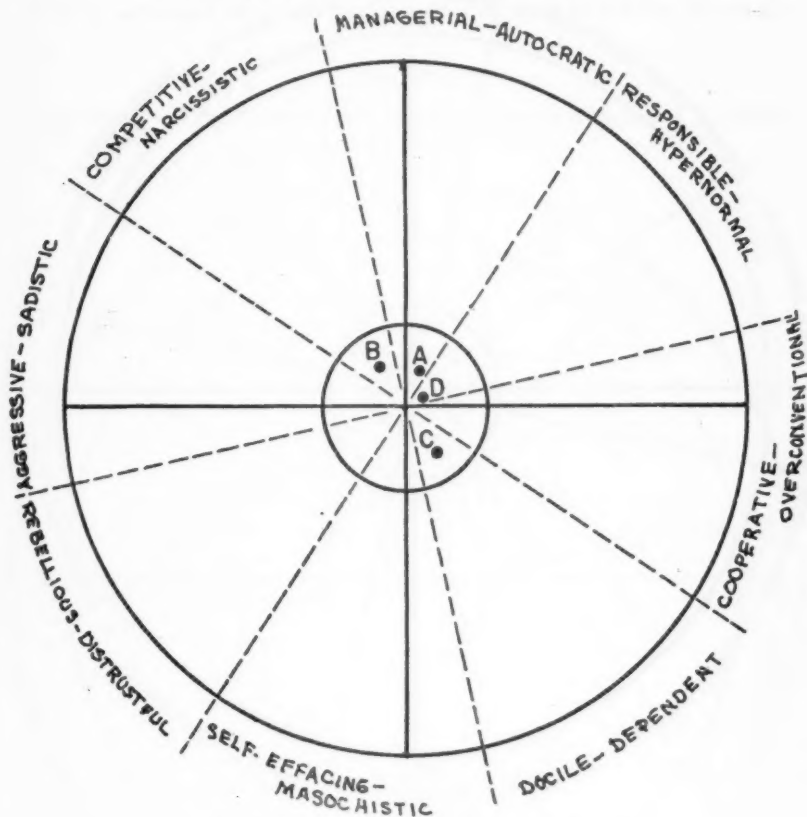
Self-other Comparisons

Contrary to expectations, the patients generally described themselves in about the same way as they were described by significant others in their lives. Regardless of diagnosis, the patient self-images most closely approximated the images of them held by their spouses and other relatives (Figure 2). Slightly, but not significantly, different were the nurses' concepts of the patients as is indicated in Figure 3. The nurses portrayed their charges as somewhat more dependent, docile, (i.e., submissive) and more hostile than the patients, both male and female, conceived themselves to be. However, the greatest and only significant statistical and profile differences occurred in the conceptions of therapist and patient (see Figure 3). The therapists were the only group who, at this level of conscious description, saw their patients, particularly the males, as being on the negative or more hostile, distrustful, blunt, exploitive, aggressive end of the continuum. At the same time they also saw the patients as being far more docile and dependent than did the patients themselves.

The extent of these differences between therapist and patient varied con-

FIGURE 2

Vector Mean Profiles of Concepts of Self of Male and Female Patients in Relation to Concepts of Them by Their Respective Spouses



KEY: A = Male patients' concepts of self
 B = Wives' concepts of patients
 C = Female patients' concepts of self
 D = Husbands' concepts of patients

siderably with hospital ward and did not vary with the sex of the patients. It is not beyond reason to assume, therefore, that these patient-therapist discrepancies are perhaps mostly a function of the orientation and interpretation of the therapists, who often tend to view conscious behavior as

FIGURE 3

Vector Mean Profiles of Concept of Patient by Self, by Nurse, and by Therapist



KEY: A = Male patients of self
 B = Nurses of male patients
 C = Therapists of male patients
 D = Female patients of self
 E = Nurses of female patients
 F = Therapists of female patients

primarily a facade and search for the "real" person at a deeper level. The nurse who is less well trained in the intricacies of psychiatric theory tends to reproduce more closely the patient's concept of himself. Those persons with the least training in this area and the greatest amount of contact with the

patients such as wives, husbands, parents, and other relatives tend most faithfully to reflect the patients' images of themselves. It should also be noted that despite all these variations, patients were generally described by all these significant others and by themselves as being well within the statis-

FIGURE 4

Vector Mean Profiles of Male and Female Patients' Concepts of Their Spouses in Relation to Spouses' Concepts of Self



KEY: A = Male patients' concepts of their wives
 B = Wives' self concepts
 C = Female patients' concepts of their husbands
 D = Husbands' self concepts

tical and profile range for psychiatric cases according to the standardized norms for clinic cases.

Patients' Concepts of Real and Ideal Others

The patients' images of their spouses and parents are equally interesting. The male and female patients both described their spouses as more dominant than those spouses described themselves. On the love dimension, the two concepts (patient of spouse and spouse of self) almost coincided (Figure 4). Suffice it to add that there was less statistical agreement between the patient's concept of the spouse and the spouse's concept of self than between the patient's self-concept and the spouse's concept of the patient.

Finally, both male and female patients, regardless of diagnosis as psychotic or nonpsychotic, visualized their fathers as more dominant and somewhat less cooperative and conventional (love dimension) than their mothers. On the dominance axis male and female patients rated these significant others from most to least in this order; spouse, father, and mother. On the love dimension, the descending order was mother, spouse, and father. The differences between concepts of these important others was not significant on either of the major axes.

As with the patients' ideal concepts of themselves, so the patients' concepts of the qualities of an ideal husband or wife, father, and mother were outside the range of normality for psychiatric cases. The male and female patients almost equally idealized significant others as overly dominant, overly loving, responsible persons. It would appear, therefore, that these patients have almost a single concept of the ideal personality and generalize this concept to all significant others regardless of the roles and statuses of these others.

Control Factors

These self-concept, ideal concept, and retrospective self-concept profiles and scores were found to be almost totally unrelated to the various criteria against which they were analyzed. Neither the sex, age, education, or occupation of the patient (or of the husband) nor the psychiatric diagnosis, length of hospitalization, number of previous admissions to psychiatric institutions, and the type of release granted (i.e., improved, trial visit, unimproved and A.W.O.L. and/or Against Medical Advice) seemed to bear any significant relationship to the concept profiles and scores or the discrepancies among them (see Table 1). In addition, the discrepancy scores between these concepts were also found to be unrelated to these same criteria.

TABLE 1

*Vector Mean Standard Scores by Psychiatric Diagnosis,
Marital Status, and Admission Type*

	N	Dom.	S.D.	P	Low.	S.D.	P
Psychoneurosis *	57	46.6	11.7		53.6	9.8	
Male	14	50.4	9.8	n.s.	53.8	7.9	n.s.
Female	43	45.4	11.9		53.6	10.0	
Married female	29	45.8	12.5	n.s.	53.8	8.9	n.s.
Nonmarried female	14	44.6	10.3		53.2	12.0	
First admission (female)	32	45.6	12.3	n.s.	53.5	8.9	n.s.
Multiple admissions (female)	11	44.7	4.5		54.0	12.1	
Personality trait disturbance *	38	50.7	10.2		50.4	9.9	
Male	23	51.8	10.2	n.s.	49.7	8.9	n.s.
Female	15	49.0	9.8		51.7	10.1	
Married male	13	52.7	11.7	n.s.	50.3	9.4	n.s.
Nonmarried male	10	50.7	7.5		48.8	8.9	
First admission (male)	14	54.1	11.2	n.s.	52.2	8.5	n.s.
Multiple admissions (male)	9	48.3	6.6		45.7	8.8	
Married female	9	52.0	11.1	n.s.	47.4	8.5	n.s.
Nonmarried female	6	44.5	4.7		58.0	9.6	
Schizophrenia *	28	50.2	9.7		54.1	6.7	
Male	10	52.5	10.0	n.s.	55.7	4.3	n.s.
Female	18	48.9	9.4		53.3	7.0	
All other psychoses *	17	52.5	11.3		54.0	10.9	
Male	11	54.7	12.2	n.s.	52.5	10.7	n.s.
Female	6	48.5	7.7		56.7	11.0	

* Diagnostic categories did not significantly differ.

DISCUSSION

Contrary to expectations, the findings obtained in this study indicate that hospitalized mental patients largely portray themselves in the image which significant others such as spouses, relatives, nurses, and therapists have of them. Not only were the discrepancies in the self-other concepts minimal, but such as did occur (patient-therapist) might perhaps as often be attributed to the special training and viewpoint of the therapist including his interest in

the "deeper" qualities of personality and his occasional impatience with the so-called superficial traits which are overtly manifested.

This study is far from a conclusive test of the validity of self-theory as a framework for the understanding of psychiatric impairment. It does point up the possibility that mental patients are deficient not nearly so much in their self-concepts as in their ability (a) to perceive others realistically and (b) to alter their interpersonal and role behavior to conform with the ideal images which they seek and which they would like others to have of them. In short, they may simply be incapable of or, for other reasons, resistant to relating themselves to significant others in such a manner as is sufficient to warrant altered conceptions of them by significant others and consequently by themselves.

An equally plausible interpretation involves the instrument. The ICL, apart from its other shortcomings, may simply be too insensitive as a research instrument for measuring self-other discrepancies. The evidence for this is chiefly in the lack of relationship between self-concept profiles and summary scores on the one hand and any of the many independent criteria such as age, sex, diagnosis, length of hospital stay, and outcome on the other.

A third possibility concerns the subjects. The patients in this study were not randomly selected and hence were found to overrepresent the less seriously disturbed and confused patients, i.e., those capable of answering the 128 questions shortly after being hospitalized. These patients, however, were probably more disturbed than the clinic cases on whom this instrument was standardized.

On the other hand, the instrument is apparently sufficiently sensitive and the patients sufficiently disturbed to indicate some profile and statistical discrepancies between patients' conceptions of significant others and the self-conceptions of these significant others. Whether these discrepancies are greater than would be expected in a nonmentally ill population is not known since comparable data on this latter population is unavailable.

SUMMARY

This paper reports an attempt to test some hypotheses derived from self-theory as they may apply to the study of mentally ill persons. The specific interest concerned on the one hand the relation between the self-concepts of mental patients and the concepts held of them by significant others and, on the other hand, the patients' conceptions of these significant others in relation to the conceptions of self of these others.

The general findings were derived from a study of 140 institutionalized mental patients using the Interpersonal Check List as the research instrument for evaluating self-other concepts. It was found that:

1. Patient self-concepts do not in general appreciably differ from the concepts of them held by spouses, other relatives, nurses, or therapists (i.e., significant others).

2. Patients tend to view significant others (notably their spouses) differently from the way these persons view themselves. Patients also see their former or retrospective selves as being more within the normal range for psychiatric cases than their present or ideal selves.

3. Patient self-concepts, past, present, and ideal, and the discrepancies among them are almost wholly unrelated to age, sex, diagnosis, length of hospital stay, case outcome, or any of the many other criteria data.

It was suggested that these and the other findings presented indicate that perhaps it is not the self-other discrepancies which are the important problem in mental illness but rather the patient's inability to perceive others realistically and to play his roles in such a manner as to warrant a changing definition of him by others and by himself.

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Some Effects of Feedback on Behavior in Groups¹

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A theory of leadership (1) builds upon the application of the empirical law of effect. Leadership evolves partly as a function of the differential ability of members to reinforce or reward the group to make the group more effective to its members. The present study examined the significance of knowledge of results, independent of its reinforcing effects on content learning, to the objectively assessed performance of members and their interaction.

PURPOSE

The hypothesis under examination was that groups given correct knowledge of results of their success in attaining task goals, when faced with a series of problems of differing content, would exhibit more effectiveness than groups operating without such feedback. Content learning was minimized to emphasize the possibility of affecting the learning of appropriate ways of interacting. Each of ten problems solved had no specific items found in preceding problems. If the groups fed back knowledge of actual results in a neutral way exhibited over-all superiority in reaching accurate decisions, such superiority would have to be attributed to their improved learning as a group how to solve problems rather than increased knowledge of the content per se of problems to be solved.

Feedback and Changing Behavior in Groups

Knowledge of performance, the traditional term for "feedback," has been a commonly used method for improving individual learning and performance (11, 12). Underwood (13) suggests that there are two ways in which the variable, feedback, increases the rate of learning. First, through feedback, an individual is told of his incorrect responses and can then change his behavior to progress more rapidly to his goal. Second, feedback may increase or at least maintain motivation.

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Several studies of behavior in groups suggest that feedback may affect social or interactional learning in the same way.

Kelman (7) manipulated feedback in the autokinetic situation to study the effects of motivational and experimental factors upon an individual's suggestibility. Using three experimental conditions of feedback and the control condition of no feedback, he measured the extent *Ss* changed their judgments in the presence of a confederate (who judged differently). *Ss* given no feedback showed more variability of response in the presence of the confederate. *Ss* given feedback indicative of success had lower suggestibility scores than the control group, while *Ss* who were given feedback indicative of failure showed higher suggestibility scores than the control group. Scores of the group receiving ambiguous feedback were not significantly different from the control group in suggestibility. Kelman also pointed out that *Ss* in the control group were subject to conditions of more conflict than other groups, thus accounting for the greater variability of their scores.

Jenkins (6) commented as follows on the importance of a feedback mechanism to productivity of discussion groups:

If it is to be an effective producing unit, a discussion group must give attention to its mechanisms of operation. Awareness of its direction and goal, its rate of progress, present location on its path to the goal, use of members' potential ability and its ability to improve itself are important factors which lead to increased efficiency.

In a group discussion, the stated problem, information, and suggestions are integrated, sorted, and refined to produce solution, decision, or learning. But, without knowledge of progress, members of a group may become aggressive toward each other or escape the situation through apathy and boredom. Jenkins suggested the use of a "productivity observer" to feed back information into the group concerning rate of progress, motivation, participation, leadership, and other factors of importance to the group. After feedback a group self-evaluation session was recommended.

Following an experiment, Leavitt and Mueller (8) concluded that "free feedback" is an aid to accuracy in interpersonal communication and that the presence or absence of feedback affects the sender-receiver relationship. "Zero feedback" is accompanied by low confidence and hostility; "free feedback" is accompanied by high confidence and amity.

Reporting the effects of four conditions of feedback upon defensive behavior, Gibb, Smith, and Roberts (5) suggested that positive feedback produced significantly less defensive feeling within the group than negative feedback. Feedback concerning feelings produced significantly less defensive feeling than did task feedback. Significantly higher task efficiency occurred under positive feedback and also under feeling feedback compared to task feedback. Similarly, in a related study, Lott, Schopler, and Gibb (10) sug-

gested the importance of feeling-oriented feedback, as opposed to task-oriented feedback, in reducing defensive feelings and increasing task efficiency in small problem-solving groups.

French (4) reported an interaction between feedback and motivation on task performances. Her results showed achievement-motivated subjects achieve higher performance scores under task-relevant feedback, while, on the other hand, affiliation-motivated subjects perform better under "feeling" feedback.

Berkowitz and Levy (3) also discovered a relationship between feedback and task motivation. They found that work groups which have high "pride in group performance" are highly productive. In turn, this "pride in the groups," which is associated with high group task motivation, was believed "to result from members' perception that the group as a whole performed effectively." Manipulating feedback, the authors found that favorable performance feedback given to the group as a whole produced high task motivation.

METHOD

Subjects and Motivation

Incentives for volunteering and maintaining motivation of 26 groups of sorority girls (5 per group) during the experiment were the offer of a free but highly desired three-hour beauty analysis at a local charm school for all participants, and a complete beauty course for all members of the group achieving the highest scores in the experiment.

Apparatus

Each of ten sets of five cities was presented to Ss on poster cards. The problem was to rank the cities in order of population before and after group discussions about each set. An attempt was made to equate each set in difficulty. All cities between 90,000 and 600,000 in population were ranked according to the 1950 census. Then sets were assembled so that each larger city was 20 ranks higher in size than the next larger city in the same set. Subsequent analysis suggested that complete equality was not achieved, however.

Subjects registered their rank orders of the five cities directly into an analog computer. The computer, which calculated the correlations between various rank orders providing the basic data for analysis, has been described in detail (2). The computer is fed by E and Ss using six rating panels. Each rating panel consists of two rows of five-position selector switches, with five switches per row. E's panel is used to record the true rank orders and the

group decision on each problem. The other five rating panels are operated by the group members. Rank orders by members prior to the discussion period are made by manipulating the left bank of switches, and rankings by members after discussion are made by means of the right bank. A sliding panel permits visual examination of only one bank at a time. Tied ranks by an *S* are indicated by a flashing light on *E*'s panel and are eliminated by *E*'s direction. The rank difference correlation "score" is indicated on an ammeter. The specific "scores" yielded will be itemized when discussing the experimental results.

Procedure

The 26 groups were assigned to either feedback or no-feedback with 13 groups performing under each condition. Assignment to either condition was made using an ABBA sequence. The members of each group were seated in a semicircle so that the poster of material to be ranked was equidistant from each. Each of the ten sets of cities were ranked privately by each member of the group both before and after a three-minute group discussion during which the group reached a decision concerning the ranking of the cities. All groups were treated alike with respect to the above procedure and the problems were presented in the same order.

Those groups receiving feedback were informed by *E* of the correct rankings of the cities after each problem, i.e., they were informed of the correct ranking, following the final private ranking by each *S* of a given set of cities. Groups receiving no feedback were not informed of the correct rankings at any time during the experiment.

RESULTS

Initial Accuracy

Initial accuracy was the rank order correlation between the average member's initial private ranking and the correct rank order.

It had been assumed that the problems were equal in difficulty. No randomization of presentation of the problems was regarded as necessary. However, a Type I "mixed effects" analysis of variance [see Lindquist (9)], examining the effects of feedback vs. no feedback and periods or replications found a significant (at the 1 per cent level) but unsystematic variation in initial accuracy with the ten different problems. Initial accuracy was highest on the first, eighth, and ninth problems and lowest on the sixth and tenth. For this reason, no further period-by-period analyses were made. All results concern average performance on all ten problems combined.

The average correlations of any member's initial private rankings with

TABLE 1
*Means of Feedback and No-Feedback Groups in Measures of Accuracy,
 Change, and Coalescence*

Correlation Measure	Mean	
	Feedback	No feedback
Initial accuracy of average member	.15	.15
Final accuracy of average member	.28	.22
Accuracy of group decision	.30	.22
Correlation of group decision with initial rankings	.27	.29
Acceptance of the group decision	.70	.69
Stability of initial and final ranking	.32	.35
Initial agreement among members	.10	.14
Final agreement among members	.63	.66

the correct rankings of the cities was .15 in both feedback and nonfeedback conditions as shown in Table 1. There was no interaction between treatment and periods. Accuracy was practically identical for both treatments on all ten problems. It was inferred that no content per se was learned. That is, being informed about the correct size of say, Houston, Akron, Youngstown, South Bend, and Waterbury did not increase accuracy in the groups so informed about the relative populations of San Diego, Norfolk, Tacoma, Austin, and Lincoln.

Accuracy of the Group Decision

The average accuracy of a group decision was the extent the common ranking reached publicly after discussion, correlated with the correct rank order. The mean rho correlation for the 13 feedback groups was .30. The mean for the 13 groups with no feedback was .22. The appropriate F ratio of 5.85 for 1 and 24 d.f. was significant at the 5 per cent level.

The greater accuracy of the group decision could not be accounted for by differences in greater initial knowledge of content in groups given feedback because no differences existed in initial accuracy between feedback and non-feedback groups.

Accuracy of the Final Private Decision

The average member's final accuracy in groups with feedback was .28 while it was .22 in groups without feedback. An F ratio of 3.30 was found when the variance due to treatment in the accuracy of the average member's decision after discussion was compared with the variance between groups within treatments. (An F of 4.26 is significant at the 5 per cent level.)

TABLE 2

Comparison of the Analysis of the Total Variance in the Initial and Final Accuracy of the Average Member

Source	(x10,000)	
	Variance Estimate	
	Initial accuracy	Final accuracy
Treatment	5.60	1064.50
Groups within treatments	105.73	324.20
Member's within groups	116.18	22.86

An examination of the change in the distribution of the total variance in accuracy from initial to final accuracy is interesting. As shown in Table 2, initially the variance in accuracy was due to subjects and groups. While subject variance practically disappeared finally, and variance in final private accuracy due to treatments increased greatly, a considerable amount remained in groups within treatments. Significant variation at the 1 per cent level appeared between groups within treatments on final private accuracy ($F = 14.7$), but all variation between groups initially in accuracy could be accounted for by individual differences in subjects ($F = .90$).

Other Measures

Other measures calculated from the various rank orders included the correlation of the group decision with the average member's initial decision, the correlation of the average member's final decision with the group decision (acceptance of the group decision), the correlation between the average member's initial and final rankings, and the correlation in rankings between members of a group before discussion as well as this correlation after discussion. No significant treatment effects emerged for these measures (shown in Table 1) of coalescence and change of opinion, but all exhibited significant effects due to groups within treatments.

DISCUSSION

If the task had required the learning of content then individual accuracy would have been expected to be greater under feedback also. The results show that this was not the case. Since superiority of group accuracy under feedback was not due to learning of content, it may have been due to one or a combination of other factors.

1. The group may have learned that one attack on the problem was more effective than another approach in reaching its goal; thus, a more accurate group decision was reached when the members discussed factors that would

have bearing on the size of the cities rather than by merely taking a majority vote as to their ranking.

2. The group learned that one or two members were responsible for the most accurate group decisions; in subsequent trials they delegated more authority to these persons.

3. Motivation or interest in the task was greater with feedback.

Other Differences

Other effects of feedback were observed although not assessed systematically. During the group discussion periods, groups not receiving feedback exhibited more boredom and discouragement than did those groups which received feedback. For example, it was observed that the no-feedback groups were distracted from the subject more often. Between problems, groups receiving feedback discussed the preceding problem more often than did no-feedback groups. It was also noted that groups without feedback were often reluctant to terminate personal discussions and begin the next problem.

SUMMARY

A total of 130 sorority members were examined in 26 groups of 5 each. Members privately ranked each set of five cities, discussed the ranking, reached a group decision, and privately ranked the cities again. Thirteen groups received knowledge of the correct ranking of cities following each of ten attempts to reach these rankings by group discussion for ten sets of cities. Thirteen groups did not receive this information.

Although experimental and control groups did not differ in initial member accuracy on the average problem, the groups with feedback exhibited significantly more accurate group decisions gauged by the correlation of group decisions with the correct rank orders. The average member of groups receiving information gained significantly more in personal accuracy on each of the ten problems. It was inferred that the groups with feedback "learned-to-learn" rather than learned content.

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The Effect of Role-Playing Experience on Role-Playing Ability¹

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In recent years the use of role playing as a means of training and therapy has become increasingly popular. There have, however, been relatively few attempts to validate role-playing techniques. A recent review (11) of experimental evaluations of role playing has concluded that the majority of such studies simply attempts to demonstrate that role playing produces discernible attitudinal or behavioral changes. Few of these studies have been concerned with testing the assumptions that are made by role-playing practitioners to justify and explain their use of role playing. These assumptions are important because they help to provide a theoretical rationale for role playing and to relate role-playing procedures to role theory as formulated by Cameron (3) and Sarbin (15). A review of role-playing literature suggests that these assumptions can be formulated in the following terms:

1. Role-playing experience increases role-playing ability.²
2. Role-playing experience increases interpersonal adjustment.³
3. Role-playing ability is positively related to interpersonal adjustment.

The present study is limited to a consideration of the first assumption. Among role theorists this assumption has found neither support nor rejection. Sarbin (15), Cameron (3), and Sargent (16) suggest that roles are learned behavior, but they neither raise nor answer the question of whether learning to enact specific roles improves the performance of these and other roles. However Cameron (3) and Sarbin (15) both assume that the opportunity to play roles as a child is directly related to role-playing ability as an adult and they view children's role playing as an essential aspect of the socialization process.

¹ The present study was part of a larger investigation carried out cooperatively by the authors and B. Levin, B. Margolis, the late J. R. McColl, F. Neff, and W. Wood. The authors are grateful for the contributions of these co-workers who were indispensable in collecting data.

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² Role-playing ability is defined in terms of the size of the role repertoire and the effectiveness of the role enactments.

³ Interpersonal adjustment is defined in terms of role-playing ability and the situational appropriateness of the roles that are performed.

In the writings of role-playing practitioners the proposition that role-playing experience increases role-playing ability is implicit rather than explicit. Moreno (12), for example, states that role-playing experience improves spontaneity. By defining spontaneity as the ability to "give an adequate response to a new situation or a novel response to an old situation" (12, p. 336), Moreno approximates the authors' definition of role-playing ability. Lawlor (10) also appears to postulate a positive relationship between role-playing experience and role-playing ability when he discusses role therapy in the following terms: "If the role repertoire (of an individual) is small and little satisfaction is derived from each of the roles, he may be aided in developing new roles. He may be allowed to play roles on stage" (10, p. 5).

Although none of the role-playing experiments reported in the literature are formulated explicitly to test the assumption that role-playing experience increases role-playing ability, a number of studies offer relevant findings.

Harrow (5) utilized role playing with two groups of schizophrenics and compared these to a control group of similar schizophrenics not exposed to role playing. She found that the experimental groups changed more on a role performance test than controls on the criterion of "realism of role performance." "Spontaneity of role performance" and "quality of role interaction" showed trends in the expected direction. It is not clear from Harrow's report whether judges who rated the role test performance were aware of which groups were experimental and which control. If they were aware of the difference between groups, the results that were obtained may have been due to observer bias. In addition, it must be noted that the subjects of this experiment were schizophrenics. It is difficult to generalize these results to normal populations.

Haskel (7) has tested the relationship between role-playing ability and role-playing experience on a population of prisoners awaiting parole at the Rikers Island Penitentiary who may be assumed to be somewhat more typical of the population at large than the schizophrenic sample used by Harrow (5). Haskel (7) found that role-playing experience improved role-playing ability as measured by performance on a standard role test. Judges of the role test were unaware as to which groups were control and which experimental so that the findings appear valid. It is to be noted, however, that the role test consisted of having the subjects portray only two different assigned roles in one standard setting. Under ordinary social conditions individuals perform a variety of roles in a variety of settings and do so when they decide that the roles are situationally appropriate, rather than when they are told to do so by someone else. To some extent, therefore, Haskel (7) used an unrealistic measure of role-playing ability.

A similar criticism may be made of the measure of role-playing ability

used by Gibb (4) in order to test whether role-playing experience improves role-playing ability, when the latter is defined as the ability to perform a role which previous testing has shown to be unnatural for the given subject. Gibb (4) found that significant improvement in role-playing ability did occur in subjects who had a series of training experiences including role playing as compared with subjects who underwent the same training experiences but without role playing. However, the design of the experiment does not justify the conclusion that the improvement in role-playing ability was due solely to the role-playing experience. Persons in the role-playing groups also received a series of other training experiences so that reported improvement in role-playing ability may have been due to an interaction between these other training experiences and the role playing rather than to the role playing itself.

Finally, Kelly, Blake, and Stromberg (8) have studied the differential effects of role-playing experience on the role-taking ability of ascendent and submissive subjects. They report that role-playing experience improves the ability of ascendent, but not submissive, subjects to take a given role when filling out an attitude questionnaire and improves the ability of submissive, but not ascendent, subjects to resist group pressure. The methodology of the study is carefully designed, but the findings have two limitations in the present context. First, the dependent variable is role taking rather than role playing. Persons were asked to answer a series of questions as if they were someone else rather than actually portray the role of another in a role-playing scene. Second, the role-playing experience to which the subjects were exposed was extremely limited. Each subject simply role played the same situation twice, taking different roles each time. In contrast, the other studies that have been considered involved role-playing experience which extended over weeks and months.

In summary, while the studies which have been reviewed have methodological limitations, they do offer support for the assumed relation between role-playing experience and role-playing ability.

Hypotheses

In formulating the specific hypotheses of this study the authors were faced with the problem that the extent to which role-playing ability might be affected by role-playing experience is not clearly specified in role-playing literature. The relationship between role-playing experience and role-playing ability could take at least three different forms:

First, role playing a specific role might improve the performance of that role when it is enacted again at a later date. This assumption is made by trainers who teach individuals to take or improve their performance of a given role such as salesman, nurse, or foreman (1, 6).

Second, the performance of a number of roles in a given setting might improve all role performances in that setting. This assumption is made by practitioners (12) who train professional role players (auxiliary egos). Training in the enactment of a variety of roles in the general context of the role-playing session is said to enable the role player to enact effectively any role that he may be called on to perform in such a session.

Third, role playing a limited number of roles in a series of role-playing sessions might improve an individual's ability to take other roles in other settings that had not been portrayed in the role-playing sessions. This assumption is made by practitioners who use role playing as a therapeutic method (9, 10).⁴ Since the role therapist cannot anticipate all the life situations his client may encounter, he needs to assume that the enactment of certain roles in role-playing sessions will affect and improve his client's role performance in life situations not dealt with in the course of role therapy.

In order to determine whether role-playing experience affects role-playing ability in the various ways suggested above, the following hypotheses were formulated:

1. The enactment of a role in role-playing sessions improves the future enactment of that role.
2. The performance of a number of roles in a series of role-playing sessions improves role enactments in future role-playing sessions.
3. The performance of a number of roles in a series of role-playing sessions increases the number and improves the effectiveness of role enactments in a situation that was not specifically enacted in the role-playing sessions.

It is important to note that while hypothesis 1 is simply equivalent to the common sense notion that "practice makes perfect," this is not the case with hypotheses 2 and 3. These latter hypotheses are concerned with role-playing ability as it is generalized over situations. The existence of such a general ability, as indicated by the findings of Mouton, Bell, and Blake (13), and the possibility that it is amenable to improvement through training, which was tested in the present study, are both of crucial importance for the formulation of a much needed sociologically oriented learning theory. Such a theory must consider the general ability to perform roles as the limiting condition imposed by individual personality and experience on social learning, and describe the procedures which are conducive to the development of this general ability. The implications of hypotheses 2 and 3 are, therefore,

⁴ Role therapists such as Lawlor (10) describe role therapy as dealing solely with the social behavior of the individual: it does not attempt to achieve personality change or carry out ego therapy. Instead, role therapy is said to enable the individual to become more effective in his role behavior and more flexible in fulfilling the role requirements of the various situations in which he finds himself.

more broad than may immediately be apparent, since they relate to important aspects of such a theory.

METHODS

Instruments

Hypotheses 1 and 2 were tested by means of a 5-point *Role-enactment Rating Scale* that was used by role-playing subjects to rate their own role performances as well as that of other group members on the effectiveness with which they took their respective roles. The rating scale used the categories of "fair," "good," "very good," "excellent," and "superb." In order to permit further testing of hypothesis 2, a 5-point *Role-playing Rating Scale* was used by judges to rate tape recordings of role-playing scenes on the "over-all effectiveness of the role enactments." The rating scale used the categories "below average," "average," "above average," "high," and "very high."

In order to test hypothesis 3, observers used a 5-point *Quality of Role Performance Rating Scale* to evaluate the "effectiveness of the subject's role performances" in a situational test. The rating categories used were identical with those utilized in the *Role-playing Rating Scale*. In addition, judges who listened to tape recordings of the situational test used a *Role Behavior List* to count the number of roles taken by the subjects. This list was based on Benne and Sheats' (2) analysis of roles frequently taken in small discussion groups.

Subjects

The experimental sample consisted of 96 subjects drawn at random from a graduate course in education. Thirty-three of the subjects were male, 63 were female. The median age of the subjects was twenty-nine; the age range extended from nineteen to fifty-three years. Fifty-five of the subjects were white and 41 were Negro.

Procedure

The 96 subjects were divided into two groups of 48 subjects each, one group hereafter referred to as experimental group, the other as control group. Assignment to the groups was made by means of stratified random sampling that controlled for race and sex of subjects.

The experimental procedure was divided into the following three phases:

1. Both experimental and control groups were randomly subdivided into six groups of eight each. During the first two days of the experiment, all twelve groups were given a situational test that consisted of a 15-minute dis-

cussion of the topic "The Adequacy of Grades as a Measure of Ability in Graduate Study." Two observers rated the role behavior of each of the group members using the *Quality of Role Performance Rating Scale*.

2. After the first two days the 48 members of the experimental group were reassigned to groups of eight. The new assignment was made by means of stratified random sampling with race and sex again controlled. An additional restriction on random assignment was made to ensure that not more than two subjects who had been together in the situational test were in the same group under the new assignment. The same procedure was followed for the control group.

During this second phase each eight-man group of subjects met four times a week for one hour over a period of three weeks. The experimental groups were engaged in role-playing activity; three of the control groups met as discussion groups that were free to discuss whatever they wished; the remaining three control groups met as study groups to discuss assigned readings. Both the discussion and the study groups were planned as a control for the influence of the graduate course in which all the subjects participated and for the effect of group member interaction which by itself might produce certain changes in role behavior. The study groups were furthermore used as a control for task orientation.

An observer was present at each group meeting. He kept a running account of the meeting and ascertained that group members carried out their respective activities. Observers were rotated every three sessions in order to randomize any effect that their personalities might have had on the group.

During the first group meeting the subjects received instructions for their respective group activities. Role players were given some printed material about the nature and use of role playing. They were also given a demonstration of how role playing could be used and how they were expected to organize their hourly meetings. Discussion group members were encouraged to discuss subjects that came up in the general lecture session of the graduate course they were attending. Study group members were instructed to select six books from a book list issued in the general course and to discuss these books in their meetings.

The three group activities were planned so as not to require assigned leadership. Therefore the problem of distinguishing between the effects of (a) the leader's personality, (b) the leader's competence, and (c) the group activity itself did not arise in the interpretation of results.

3. At the conclusion of phase two the groups formed in the first phase of the experiment were reconstituted and the procedure described in that phase was repeated.

Procedure in Experimental Groups

In order to permit all role-playing subjects equal participation in role playing, each role-playing group was subdivided into two groups of four. This also ensured the presence of an audience for each role-playing scene since only one of the subgroups was actively engaged in role playing during any given role-playing scene. The initial subgroup assignments were made at random; they were changed from day to day so that each member spent approximately the same amount of time with each other member in role playing.

During the last 20 minutes of each meeting, subgroup assignments were rotated and the subjects in the new subgroups were asked to plan a role-playing situation for the following day. They were requested to fill out a Role Plan on which they had to identify what role each subgroup member was planning to take and the nature of the situation that was to be enacted. These Role Plans were given to the observer at the end of the session. At the beginning of each meeting each subgroup of four was allowed about 20 minutes for presenting its role-playing scene, so that there were two role-playing scenes each day, taking about 40 minutes. After each role-playing situation group members were asked to fill out the *Role-enactment Rating Scale* on which they rated the roles that had just been performed.

RESULTS AND DISCUSSION

The hypotheses were tested by means of a series of t-tests, using a .05 level of significance. Since several of the subjects withdrew from the course or failed to participate in some of the post-experimental testing, the number of subjects varied slightly from test to test. This variation is indicated in the N given in the subsequent tables.

A comparison of ratings received by role players on the *Role-enactment Rating Scale* for two different portrayals of the same role furnished the data for testing hypothesis 1. While group members were free to choose the roles they wished to play, they tended to repeat at least one role enactment during the course of the role-playing sessions. For each repeated role the difference between an individual's self-ratings, between the ratings made by fellow role players, and between the ratings made by audience members were analyzed. Separate analysis of the three sets of ratings was necessary because Rosenberg (14) has reported that an active role player's perception of a role-playing scene differs from that of an observer. Analysis of the three types of ratings, as summarized in Table 1, indicated that the differences were found to be significant. The hypothesis was therefore supported.

TABLE 1
*Ratings of Role Performance of the Same Role Performed at
 Two Different Role-playing Sessions*

(N = 47)

Criterion variable	Pre		Post		Difference
	Mean	SD	Mean	SD	
Self-ratings	2.74	.65	3.13	.81	.39*
Role players' ratings of fellow players	3.13	.55	3.35	.61	.22*
Audience ratings of role players	3.06	.52	3.40	.64	.34*

* Significant at the .05 level.

Hypothesis 2 was tested by analyzing the significance of the difference between average ratings received by role players on the *Role-enactment Rating Scale* during the first three and the last three role-playing sessions. A threefold test of the hypothesis consisted again of an analysis of self-ratings, ratings by other role players, and ratings by audience members. The differences of the three sets of ratings were significant, as shown in Table 2, indicating that role players perceived a general improvement in role performance regardless of the roles performed. However, the subjects' ratings may have reflected expectation of improvement with continued role-playing experience rather than actual improvement in role-playing ability. In order to test the validity of group members' perceptions, five judges used the *Role-playing Rating Scale* to rate the quality of role performance in early and late sessions of each role-playing group from tape recordings. Since the judges did not know whether a given recording was made at the beginning or at the end of the experiment, their ratings could not be influenced by expectation of improvement. Analysis of the differences between the ratings of early and

TABLE 2
Pre- and Postratings of Role Performance in Role-playing Sessions

(N = 47)

Criterion variable	Pre		Post		Difference
	Mean	SD	Mean	SD	
Role players' self-ratings	2.68	.63	3.10	.86	.42*
Role players' ratings of fellow role players	3.16	.50	3.36	.63	.20*
Audience ratings of role players	3.08	.53	3.31	.64	.23*
Judges' ratings of tape recordings	1.86	.63	2.78	.60	.92*

* Significant at .05 level.

late sessions, as given in Table 2, indicated that the differences were significant, thus substantiating the validity of subjects' perceptions. Hypothesis 2 was therefore supported by the data.

Hypothesis 3 was tested in two parts. First, improvement in quality of role performance was determined by analyzing the significance of the difference between pre- and postexperimental ratings made by observers using the *Quality of Role Performance Rating Scale* in the situational tests. Interrater reliability of observers was found to be .62. Change in the performance of role players was compared with the corresponding change in the control groups that also took the situational tests. Observers were unaware of the group to which the subjects belonged.

Second, increase in number of roles was tested by comparing the number of roles taken by the subjects in the pre- and postexperimental situational tests. Interrater reliability of judges using the *Role Behavior List* was found to be .88. Change in the number of roles taken by role players in the situational tests was compared to the corresponding change among the control subjects.

The statistical treatment of the comparisons of role players and control subjects was designed to determine not only whether experimental and control groups differed significantly in amount of change, but also whether they differed significantly in their scores at the end of the experiment. The latter analysis was necessary to ensure that significance of difference in amount of change was not an artifact due to a regression effect. A regression effect could be responsible for a significantly greater change in the group with the lower initial rating; it could not, however, produce a significantly higher final rating for that group. Since experimental and control groups differed significantly both in amount of change and in final scores, as indicated in Tables 3 and 4, hypothesis 3 was supported by the data.

TABLE 3
*Pre-Post Difference Scores and Postratings of Quality of Role
Performance in the Situational Test*

	Experimental role playing (N = 45)		Control				Difference between groups		
			Discussion (N = 21)		Study (N = 24)				
	Mean	SD	Mean	SD	Mean	SD	R-D	R-S	D-S
Pre-post difference score	1.04	.83	.47	.81	.16	.71	.57*	.88*	.31
Post score	3.19	1.03	2.71	.95	2.42	.98	.48*	.77*	.29

* Significant at .05 level.

TABLE 4
*Pre-Post Difference Scores and Post-scores of Number of
 Roles Taken in the Situational Test*

	Experimental role playing (N = 45)		Control * discussion and Study (N = 45)		Difference between groups
	Mean	SD	Mean	SD	
Pre-post difference score	6.62	22.86	1.64	8.87	4.98†
Post score	14.80	40.25	8.44	22.60	6.36†

* Discussion and study group members were combined since judges listening to tape recordings of the situational test could not distinguish between them.

† Significant at .05 level.

Since the three hypotheses of this study were supported by the data, the proposition that role-playing experience increases role-playing ability was substantiated in terms of one specific role enacted on two different occasions, in terms of a variety of roles enacted in several role-playing sessions, and in terms of roles enacted in a situation outside the context of role-playing sessions.

In order to interpret the findings of this study it is important to note that the experimental subjects were assigned arbitrarily to role-playing groups. Furthermore, no role-playing expert was provided to aid role players in their activity. These limitations, imposed on the subjects for the sake of experimental rigor, probably tended to reduce the effectiveness of role playing; they therefore add weight to the positive findings obtained in this study.

SUMMARY

The present study was designed to investigate the general assumption drawn from role theory and role-playing literature that role-playing experience increases role-playing ability. In order to attempt to substantiate this assumption, 96 subjects were selected randomly from a graduate course in education. The subjects were stratified for race and sex and randomly assigned to groups of eight. These groups met over a period of three weeks four times a week for one hour. During the hourly group meetings six experimental groups were engaged in role playing. Three control groups met in leaderless group discussions. The remaining three control groups discussed assigned readings. At the beginning and at the end of the experimental period, all subjects participated in a situational test. Trained observers rated the subjects on quality of role performance in the situational test; each test was also tape recorded and the number of roles taken by group members in each group discussion was determined.

The effect of the role-playing experience on role-playing ability was measured in terms of (a) ratings made by members of the audience, (b) ratings made by other role players, (c) role players' self-ratings, (d) ratings by judges listening to tape recordings of role-playing sessions, (e) ratings by observers in the situational test, and (f) judges' assessment of the number of roles taken by group members in the situational test. Significant increase in role-playing ability was found on all these measures. The results supported the conclusion that role-playing experience increases role-playing ability.

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Social Status, Measured Intelligence, Achievement, and Personality Adjustment of Rural Iowa Girls¹

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The research literature pertaining to the association of social status of families and measured psychological characteristics of children is becoming so voluminous that another report on the subject requires more than customary justification.² The justification for the present report is based on the nature of the sample employed, the variety of data reported, and on one feature of statistical analysis used to combine several test measures. Sewell and Ellenbogen have noted that most of the previous studies of the association of social status variables with personality characteristics of children have been based on urban samples (4). Their study permitted testing the association of social status with measured intelligence for a predominantly rural group of children. In addition to replicating this feature of the Sewell-Ellenbogen study, achievement and personality test scores are tested for their association with family social status indices for the present sample of rural girls. The other contribution of this paper lies in the attempt to derive a series of over- or underachievement scores in relation to measured intelligence and to correlate these scores with social status indices.

SAMPLE AND METHODOLOGY

The data are based upon test responses from 176 girls who were in the fourth through the tenth grades in four rural schools in a central Iowa county in the spring of 1956. The largest community in which the girls lived

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² In their bibliography, Sewell and Haller (5) list 74 studies which are principally concerned with the relationship of social status to intellectual and personality characteristics of children. In addition, the writer has a dittoed bibliography of references in which 48 reports are cited for the relationship between social status indices and children's intelligence scores. There are also 43 references pertaining to the relationship of social status and students' scholastic achievement, school or campus success, and student-teacher relations. Another 65 references are included for studies which have related social status variables to children's or young adults' personality adjustment scores or behavior ratings. A limited number of these bibliographies are available for persons especially interested in this field of research.

included approximately 500 persons. Families were predominantly second or third generation American. Only those girls who were participating in a nutrition experiment conducted by Home Economics Research in the Iowa Agricultural and Home Economics Experiment Station of Iowa State College participated in the study. Included in the test battery were the Otis Mental Abilities Test (3), the Jastak-Bijou Wide Range Achievement Test (2) and the Mental Health Analysis Test (7). Social status data were gathered by means of interviews with the mothers of the girls. For the purposes of the present analysis, social status has been defined operationally by the occupation of the father, education of the father and mother, and a home index score.

Fathers' occupations were classified into six prestige categories as: business and professional ($n = 16$), farm owners and operators ($n = 29$), farmers who were part owners and part renters or farmers who owned their farms but had some nonfarm employment ($n = 22$), farm renters ($n = 58$), sales, clerical, skilled, or semiskilled workers ($n = 29$), and unskilled workers ($n = 22$). Educational levels for fathers ranged from 6 to 18 years; for mothers, the range was from 6 to 16 years. The home index score reported by Gough (1) was modified slightly by adding two items, a television set and a deep freezer, to the list of material possessions in the home.

ANALYSIS

Most of the previous studies of the association of children's intelligence, achievement, or personality scores have employed tests of differences among means for children classified by social status levels of their families. A notable exception to this generalization is the report of Sewell and Haller (5). They employed zero order and multiple correlation techniques for the analysis of the relationships between several social status measures and the children's personality scores. The writer was reluctant to make the assumptions necessary for product moment correlation analysis and chose instead to use the Spearman rank order correlation method.

The values for each measure of social status were converted to ranks with high values receiving high ranks. The girls' intelligence and Mental Health Analysis scores were converted to ranks. For the latter test, personality liabilities and personality assets are considered as major subscores. These combine to form a total scale for the test. Higher rank was assigned to greater intelligence scores and, in terms of the test criteria, to more satisfactory personality test scores. The achievement placement scores for spelling, arithmetic, and reading were corrected for the varying grade levels of the girls by subtracting the fall grade levels from the girls' measured grade levels. In addition to testing the relation between each of the estimates of the independent variable and the girls' corrected achievement scores, the relationship

between each of these values and over- or underachievement scores in spelling, arithmetic, and reading was also determined. This was done by converting the intelligence scores and the three corrected achievement scores to standard scores, obtaining the algebraic difference between each standardized corrected achievement score and the standardized intelligence score, and adding a constant to each of the three generated series of scores in order to remove negative signs. Also composite scores, representing gross over- or underachievement, were generated by summing the three discrepancy values. These scores were also ranked with higher rank being assigned to higher scores.

With these data it was possible to test the following hypotheses: there is a positive relationship between each of the social status indices and

- (a) the measured intelligence of the girls.
- (b) each of the corrected grade-level placement scores of the girls.
- (c) each of the over- or underachievement scores of the girls.
- (d) and each of the three personality adjustment scores.

The hypotheses were stated in predictive form because most of the previous studies generally agree that children from higher social status families have higher intelligence or achievement scores and, in terms of the test criteria used, have more adequate personality adjustment scores. In view of this body of data, the Spearman rank order correlation coefficients were assessed for significance in terms of one-tailed tests. The .05 significance level was found by using a *t* formula given by Siegel (6, p. 212).

RESULTS AND DISCUSSION

The rank order correlation coefficients between each of the estimates of social status with the dependent measures are listed in Table 1.

The highest set of coefficients was found for the relationship of the girls' measured intelligence with estimates of their families' social status. Only the education level of the mothers failed to be related significantly to the girls' intelligence scores. The other three factors correlated significantly with intelligence in the predicted direction, $r_s = .23, .25$, and $.34$.

Just four of the twelve relationships involving the grade-corrected achievement scores were statistically significant for a one-tailed test, but the largest value was only $.20$. When intelligence was controlled by use of the discrepancy scores based on intelligence and achievement scores, an unexpected pattern of coefficients emerged. Of the twelve relationships based on the discrepancies of the scores, nine of the coefficients were negative or opposite from the predicted direction. Two values, $r_s = -.15$ and $-.25$, would have been significant at the $.05$ level if a two-tailed test had been used. However, in view of the one-tailed test decision, these values were classified as error

TABLE 1
Rank Order Correlation Coefficients *

Social Status Indices	Girls' test measures (n = 176)										
	X ₁	X ₂	X ₃	X ₄	X ₅	X ₆	X ₇	X ₈	X ₉	X ₁₀	X ₁₁
Occupation of father	.34	.13	-.06	.12	.05	-.12	.02	.00	.02	-.09	.02
Education of father	.25	.19	.02	.13	-.04	-.14	-.04	-.14	.11	.01	.10
Education of mother	.09	.09	-.01	.03	-.01	-.10	-.15	-.13	.13	.02	.10
Home index	.23	.11	-.12	.20	-.06	-.25	.01	-.16	.10	.11	.20

* $r_s \geq .13 = P \leq .05$ (one-tail test).

$r_s \geq .18 = P \leq .01$ (one-tail test).

X₁ = measured intelligence.

X₂ = spelling achievement minus grade level.

X₃ = arithmetic achievement minus grade level.

X₄ = reading achievement minus grade level.

X₅ = Z (X₂) - Z (X₁).

X₆ = Z (X₃) - Z (X₁).

X₇ = Z (X₄) - Z (X₁).

X₈ = X₅ + X₆ + X₇.

X₉ = mental health liabilities subscore.

X₁₀ = mental health assets subscore.

X₁₁ = mental health total score.

despite their magnitude. The three negative correlations observed for the composite over- or underachievement scores were also considered as error results.

Very little relationship was observed between the measures of social status and the girls' personality adjustment scores. Only two of the twelve coefficients were statistically significant at the .05 level for a one-tailed test, and these were low, $r_s = .13$ and .20. Taken as a body, these data offer little support for the hypotheses related to the association of the social status measures with achievement, under, or overachievement, or personality adjustment scores.

Several results of the present study can be compared with findings of Sewell and Haller (5) who studied similar relationships for a sample of predominantly rural children in Wisconsin. They found a product-moment correlation of .17 between children's intelligence scores and the prestige of their fathers' occupations and a correlation of .13 between children's intelligence scores and the rated prestige of the children's families.

These two studies agree in finding a low, positive relationship between measures of family social status and measured intelligence of rural children. However, less agreement between the two studies exists for the relationship of social status measures to the children's personality adjustment scores. Sewell and Haller found a higher relationship between occupation of father

and a factor-weighted personality adjustment score, $r = .16$, than was observed in the present study for the relationship of occupation of father to the three personality scores, $r_s = .02$, $-.09$, and $.02$. In the present study, education of the father or mother was not significantly related to the girls' personality adjustment scores. The home index used in the present study showed a nonsignificant relationship with the girls' personality adjustment subscores, $r_s = .10$ and $.11$, but a low significant correlation was found between this variable and the total personality scores, $r_s = .20$. This coefficient was similar to the value found by Sewell and Haller, $r = .23$, for the relationship between family prestige scores and a factor-weighted personality score.

These findings are limited to a sample of rural girls in central Iowa. Furthermore, the relationships must be examined in terms of the quality of data upon which they are based. Intelligence is probably the most reliably and validly measured dependent variable among those tested in the present study. If this assumption is granted, it is conceivable that the correlation coefficients underestimate the postulated relationships. Furthermore, only crude measures were used to measure social status. Therefore, it could be argued that given more precise measurements of the independent and dependent variables and less homogeneous social systems, relationships of greater magnitude should be found for the variables studied in this investigation. While this is entirely possible, when the present results are taken with the findings of Sewell and Haller, the general conclusion emerges that within relatively homogeneous social systems, social status as grossly measured in these studies is probably not an important factor in the academic achievement or personality adjustment test performance of children. It is always possible that different results may be found in urban areas or other areas where social systems show greater heterogeneity.

SUMMARY

A sample of 176 girls in grades four through ten from four rural schools in central Iowa completed an intelligence test, a three-factor achievement test, and a personality adjustment test. Family social status data were gathered by home interviews. These data included the occupation of the father, education of the father and mother, and a home index score. Rank order correlations were computed for the relationship between each of the estimates of the independent variable with each of the girls' test scores and several combinations of scores taken as measures of over- or underachievement. When the .05 level of significance was taken as the criterion for a one-tailed test, a low positive relationship was found between occupation of father, $r_s = .34$, education of father, $r_s = .25$, and a home index score,

$r_s = .23$, and the girls' intelligence scores. Very little or no relationship was found between each of the family social status indices and the three achievement scores, the four over- or underachievement scores, or the three personality adjustment scores.

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Reactions to Opinion Deviates as Affected by Affiliation Need (*n*) and Group Member Interdependence

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Festinger and his colleagues have shown (7, 8, 13) that individuals whose opinions are shared by the majority of others in their group tend to direct most of their initial communications to the few opinion deviates. Furthermore, these investigators suggest that the strength of the tendency to communicate to the deviate is correlated positively with the magnitude of the pressures toward uniformity at the onset of group discussion (7) and that the communications to the deviate decline in frequency if he maintains his extreme position (13). However, since one attempt (6) to replicate the findings pertaining to the rejection of deviates (13) has obtained important differences, the present writers felt that another test of Festinger's communication hypotheses was desirable.

In addition, the present study asks whether intragroup communications and the relationships among the group members are affected by (a) group member interdependence, and (b) the level of the communicator's need for affiliation. Obviously, group members will attempt to exert more influence upon the deviate the greater their interdependence for reward attainment. Assuming that those in the majority see their own opinion as being probably correct, the deviate member of an interdependent group is likely to be regarded as endangering their chances of success. If the deviate then resists the pressures imposed upon him and persists in maintaining his discrepant opinions, he will suffer a greater rejection in the highly interdependent than in the less interdependent group. With regard to the second variable, group members with a strong affiliative need may be more concerned with keeping the deviate in the group than those who are relatively indifferent to the problem of maintaining pleasant relations with others; as long as conditions permit equal interaction with all, the greater the number of people in the group the more likely the affiliative need will be satisfied. Consequently, high *n* Affiliation Ss will exhibit a stronger tendency to communicate with the deviate, and will be slower to reject him, than Ss having a lower level of this affiliation motive.

There is an additional factor that must be kept in mind, however. An increasing body of evidence indicates that personality motives, such as achievement (1), affiliation (2), and anxiety (12), cannot be regarded as constant reactive tendencies. Situational cues presumably must arouse the given

need before it becomes operative. Ss high in the personality need apparently have both a low threshold for need arousal and a high magnitude of responsiveness once these cues are present, but otherwise do not differ behaviorally from low need Ss. A major problem here, then, is to specify the conditions under which group members' affiliative needs are likely to be aroused. Our assumption is that *n* Affiliation will be aroused when any member's chances of obtaining a valued prize is dependent upon the actions of the others in the group, i.e., when the group members are highly interdependent for reward attainment. Recent findings suggest that individuals in this type of situation tend to become concerned with maintaining pleasant relationships with the others in the group. Thus, Ss in highly interdependent groups, relative to those in less interdependent conditions, not only are greatly affected by the behavior of the others about them (3), but also exhibit a greater readiness to conform to the perceived demands of these others (4). If this interpretation is correct, the differences between the Ss contrasted on their *n* Affiliation level should be more likely to emerge in the highly interdependent than in the less interdependent groups.

METHOD

Measure of Need Affiliation

The relative strength of each S's Affiliation motivation was assessed in a preliminary group-testing situation employing the procedure developed by French (10). Ss were told that the purpose of the experiment was to devise a test of an individual's ability "to make correct judgments on the basis of incomplete information." As the first part of this supposed research, they were given booklets containing ten sentences, each describing an individual's behavior, e.g., Item 1: "B.C. always lets the other man win." S was to write in the space provided after each of these sentences what he thought "would usually be the reason" for the given behavior.

The Es independently coded each of the items only for the presence or absence of an affiliation reference, with each S's *n* Affiliation score consisting of the sum of the tallies over all items for both coders. Based upon a random sample of 40 Ss, the Spearman-Brown prophecy formula yields a reliability coefficient of .84.

Task and Experimental Procedure

Four or five Ss of the same sex were assembled together for the group task in the second session. Ss were given the case history of a labor-management dispute that supposedly had been brought before a mediation board but then "resolved by an agreement between the company and the union before

the mediation board could act." The Ss were told their task was to demonstrate their ability to make correct "probability inferences" by predicting what the board's decision would have been if the agreement had not been reached. Fictitious information was supplied to the Ss concerning the history of the dispute and the backgrounds of each of the three mediation board members. Ss also were informed that prizes were to be awarded¹ for the best predictions as determined by a team of "experts."

The predictions were to be made by choosing one of eleven alternatives given to the Ss, ranging from a decision placing the entire blame for the dispute on the company, together with a recommendation for a heavy fine to be levied against the company, to a similar decision against the union. Ss were told they would make these predictions twice: immediately after reading the relevant information and again after group discussion of the case. The instructions designed to create either high or low interdependence, which are described below, were administered at this time, and the case history material and background data were distributed. The Ss then made their first predictions on a separate paper by checking one of eleven numbers, each indicating one of the eleven alternatives, ordered along a 6-inch linear scale. Each S sat in a separate cubicle with his predictions and communications identified only by a color code.

At this time *E* informed the Ss he would collect the predictions and record them so that each would know the predictions made by the others in the group. In actuality, after determining each S's opinion, *E* recorded a previously arranged fictitious distribution of predictions on the paper sent back to S. One member (the deviate) was always said to be four steps away from S, another member was said to be one step away, and generally (with a few exceptions) in the opposite direction, and the remaining two (or one, if there were only four in the group) were given opinions identical with those held by S. The two or three members whose predictions were close to S's are referred to as the Modal Group. The deviate was placed at the pro-company end of the scale in approximately half the cases and at the pro-union end in the remaining cases.

After each S had received a paper revealing the supposed distribution of opinions in the group, a ten-minute communication period was announced. *E* said he would pick up and deliver any notes the Ss cared to write at five and ten minutes after the beginning of the period. Here again, *E* collected

¹ This information was introduced, in part, in order to manipulate the strength of Ss' task motivation. For the High Motivation condition the prizes were described as "ten dollar gift certificates," while they were said to be "weekday passes to a local movie theater" in the Low Motivation condition. However, this manipulation was not successful in producing any significant behavioral or attitudinal differences.

the notes only to deliver previously constructed messages to each *S*. The two notes supposedly written by the deviate indicated that he would not change his opinion, while the notes from the others were neutral in content.

Ss made their predictions again at the conclusion of this communication period, and again received fictitious information regarding the opinions of the others in the group. The individual previously designated as the deviate remained the deviate four steps away from *S*'s position but the remaining group members were given an opinion score identical with *S*'s. Following this, *Ss* completed a brief questionnaire and were dismissed.

Experimental Conditions

The degree of interdependence among the group members was varied by means of a statement describing how the prizes were to be awarded. The groups in the high interdependence (H.I.) condition were told that the prizes were to be given to the members of the best *groups*, while the low interdependence (L.I.) groups were informed that the prizes were to be awarded to the best *individuals*. Each person's prediction in this latter case was to be judged independently of the others in his group. *Ss* in both conditions were told that there would be at least ten prizes "and perhaps more" in order to minimize intragroup competition within the L.I. condition.

One of the items in the postsession questionnaire was designed to test the success of this manipulation. The item, presented with an 11-point graphic rating scale, reads as follows: "Do you believe that your chance to win one of the prizes has been affected by any of the other members of the group?" The H.I. *Ss* were more likely to answer in the "yes" direction ($F = 42.92$; $p < .001$).

Three levels of *n* Affiliation were established independently of the interdependence conditions by determining whether the *Ss* in this conditions were in the upper, middle, or lower thirds of the distribution of *n* Affiliation scores for the entire sample. In computing this distribution, standard scores were calculated separately for the 33 men and 62 women in the sample. Table 1 presents the *N* in each of the six conditions. All *Ss* were volunteers from introductory courses in psychology.

Dependent Variables

Following Festinger, Gerard, *et al.* (8), the strength of the communication tendency is assumed to be in direct ratio to the number of words included in the *Ss*' messages. In establishing the present communication index, therefore, the number of words written by each *S* to all Modal Group members throughout the communication period first was divided by the number of

TABLE 1
Mean Number of Words Sent by S

S affiliation score	High interdependence			Low interdependence		
	High	Moderate	Low	High	Moderate	Low
N	19	19	10	10	22	15
To average modal group member	21.68	22.52	22.30	26.10	20.14	18.00
To deviate	68.78	52.52	77.80	51.00	55.73	57.57
Difference	47.10	30.00	55.50	24.90	35.59	39.57

other Modal Group members, yielding a measure of the S's volume of communication to the average Modal member of his group. This figure then was subtracted from the almost invariably larger number of words in all the messages sent to the deviate to produce an index of the strength of S's communication tendency to the deviate above and beyond his tendency to communicate to any member of the group.

The attractiveness of the members of S's group was assessed by means of an item in the postsession questionnaire which reads as follows: "If you were to work on a similar problem again, to what extent would you want each of your present group members to be a member of your group?" In answering this item Ss rated each of the others in the group on a 9-point scale ranging from "would not want" to "definitely would want."

RESULTS

Number of Words to Average Modal Group Member and to Deviate

The communication data are summarized in Table 1. As is readily apparent, Ss in all six conditions (a) communicate approximately the same number of words to the members of the Modal Group, and also (b) send a greater number of words to the deviate than to the average Modal Group member. All of the latter differences are significant by "one-tailed" *t*-tests² at less than the .02 level of confidence. The principle formulated by Festinger and his colleagues is thus confirmed; in the first ten minutes of discussion Modal Group members manifest a stronger tendency to communicate to the deviate than to any of the others in the group.

Analysis of variance reveals significant differences among the six conditions in the extent to which the communication tendency to the deviate exceeds

² The differences between specific conditions are tested by "*t*" tests, with the error term for these tests based upon the within mean square from the preliminary analysis of variance. Unless otherwise specified, two-tailed tests were employed, and the level of significance is $\alpha = .05$.

that to the average Modal Group member, with most of this variance apparently stemming from the difference between the H.I. and L.I. conditions. As expected, there is a greater proportion of words sent to the deviate when the group members are interdependent than when they can reach their goals independently of each other (one-tailed *t*-test).

Table 1 also shows that the relationship between *n* Affiliation level and intragroup communication is fairly complex and not altogether in accord with our expectations. Surprisingly, in the H.I. condition *both* the High and Low *n* Affiliation Ss exhibit stronger communication tendencies to the deviate than the Moderate *n* Affiliation Ss. The predicted difference between the High and Moderate affiliation groupings is statistically significant (one-tailed test), indicating that the Ss possessing the greatest concern with maintaining pleasant interpersonal relationships have a stronger desire to communicate to the deviate than Ss having a moderate level of affiliation motivation. However, the obtained difference between the Low and Moderate Ss does not appear to follow from the present conception of affiliation-motivated communication. (This latter difference would be statistically significant by a two-tailed test). Consistent with the assumption that the affiliation motive is more likely to be aroused in the H.I. than in the L.I. condition, it can be noted that (a) the High *n* Affiliation Ss in the former condition transmit a significantly higher proportion of their total words to the deviate than the comparable Ss in the latter condition (one-tailed test), and (b) all Ss in the L.I. condition send approximately the same number of words to the deviate.

Attractiveness of the Deviate

The difference between the ratings given to the deviate and the ratings given to the other Modal Group members can indicate whether or not the deviate is specifically rejected independently of attitudes toward the entire group. This specific rejection of the deviate is significant in all three of the subdivisions within the H.I. condition, but only in the High *n* Affiliation grouping in the L.I. condition. Apparently, opinion discrepancy threatens all Ss, to some extent at least, in highly interdependent groups, but perhaps only the High *n* Affiliation Ss in the less interdependent groups. The reason for the rejection of the deviate in the interdependent groups is clear. Individuals whose opinions are shared by the majority of others in their group presumably believe their opinions are probably correct. Therefore, under interdependent conditions the probably incorrect discrepant opinion endangers their chances of winning the prize since it will be counted in the group score. Consistent with this interpretation, we find, as expected, that the deviate suffers a stronger specific rejection, over all affiliation levels, in the H.I. than in the L.I. condition (one-tailed test).

According to the assumption of low need arousal in the L.I. condition, the High *n* Affiliation Ss in this condition should not consider the deviate more attractive than either of the other groupings of Ss in this condition. This prediction is supported. (In fact, the High *n* Affiliation Ss reject the deviate specifically to a significantly greater degree than either the Moderate or Low *n* Affiliation Ss ($p < .10$ for the latter case). No unequivocal explanation is readily available for this difference.

Within the affiliation-motivation-arousing H.I. condition, the High *n* Affiliation Ss exhibit a lower specific rejection of the deviate than the Ss with moderate Affiliation scores, but again this difference is not significant. On the other hand, in keeping with the hypothesis that Low *n* Affiliation Ss will be relatively quick to reject the deviate, the Low *n* Affiliation Ss within the H.I. condition manifest a significantly stronger specific rejection of the deviate than either the High or Moderate Ss in this condition (one-tailed test).

DISCUSSION

In demonstrating that *S* sends a greater volume of communications to the deviate than to the relatively large number of members in agreement with him at the onset of group discussion, the present study supports Festinger's hypotheses concerning the effect of perceived opinion discrepancy upon the direction of intragroup communications. We also have shown that the proportion of communications to the deviate early in group discussion increases with the degree of interdependence among the group members. Here again, the results parallel earlier findings. The operations performed by Festinger and Thibaut (7) to create "high pressures toward uniformity" are similar in part to our operations creating high interdependence, and similar findings are obtained in both experiments.

There is a difference between these two studies, however, with regard to the rejection of the deviate. Festinger and Thibaut do not have any sociometric data, but show that there is a falling off in the strength of the com-

TABLE 2
Mean Sociometric Ratings Made by Ss

<i>n</i> affiliation score	High interdependence			Low interdependence		
	High	Moderate	Low	High	Moderate	Low
Ratings of average modal group member	7.39	7.79	7.75	6.80	6.41	6.60
Ratings of deviate	4.53	4.21	2.60	3.90	5.86	5.67
Difference (specific rejection of deviate)	2.86	3.58	5.15	2.90	0.55	0.93

munication tendency to the deviate (i.e., presumably greater rejection of the deviate) after ten minutes of discussion, but only under "low pressures toward uniformity" and this only when the members perceive each other as dissimilar in their information and interests. In the present case and contrary to the earlier findings, there is a greater rejection of the deviate, sociometrically, in the highly interdependent groups than in the less interdependent groups. This difference in results, we believe, stems from a factor that is confounded with high member interdependence in the Festinger and Thibaut "high pressures toward uniformity" condition. The Ss in this condition were led to believe they would be evaluated as a group, creating high interdependence, but also were told that they were expected to come to a *unanimous decision*. This expectancy could have acted as an external restraint that prevented the outright rejection of the deviate.

The present data also suggest that the level of affiliation motivation in the group members affects their reactions to the opinion deviate. Thus, in the highly interdependent groups, the High *n* Affiliation Ss exhibited a stronger tendency to communicate to the deviate than the Ss having a moderate level of this need, presumably because of their stronger desire to maintain pleasant relationships with others. Moreover, the Low *n* Affiliation Ss in this condition, perhaps manifesting their readiness to reject others, assign lower sociometric ratings to the deviate at the end of the discussion period than either the High or Moderate *n* Affiliation Ss. There tend to be no differences in communication among the affiliation groupings in the low interdependence condition, supposedly because low interdependence does not arouse the affiliation need to any significant extent.

There is no unequivocal support for the present interpretation of the effect of group member interdependence upon affiliation motivation. We assumed that the affiliation motive must be aroused by situational cues if it is to affect the behavior, and that such cues are more likely to be present under conditions of interdependence than in situations in which the group members can attain their goals independently of each other. Thus, the positive correlation between *n* Affiliation and the sociometric ratings of the deviate in the H.I. condition, and the negative correlation in the L.I. condition, could be interpreted as due to the stronger arousal of the affiliation motive in the former condition. However, an alternative explanation also is available. Although the experimental procedure was designed to minimize intragroup competition in the L.I. condition, it is conceivable that this attempt was not altogether successful. Affiliation motivation could have been aroused in this condition but then counteracted by the opposing desire to do better than one's teammates.

One of the analyses described earlier casts some doubt upon this alternative

hypothesis, however. By the very nature of a competitive situation, Ss in the L.I. condition should believe that their chances to win prizes were likely to have been affected negatively by the other members of the group. That is, if any of the other group members did well (and most of the group supposedly had the same prediction as S), their own probability of winning would be lessened. To use Deutsch's phrase (5), Ss are "contritely interdependent" in a competitive situation. But, as has already been shown, the L.I. Ss were significantly less likely than the H.I. Ss to indicate on the postsession questionnaire that their chances to win one of the prizes had been affected by any of the other members of the group.

Inevitably, laboratory experimentation raises questions as to the extent to which the results can be generalized to "real-life" situations. These questions obviously become even more important when the laboratory findings appear to contradict observations made in the naturalistic setting. Thus, in the present study, we find group members directing most of their communications to the deviate, while a field observer might claim that groups form on the basis of shared opinions so that most of the members' communications are directed toward opinion sharers rather than opinion deviates. This certainly seems to be the case in Presidential elections. Lazarsfeld, Berelson, and Gaudet (11), for example, have noted that as the election campaign progresses, individuals tend increasingly to communicate predominantly with others of similar political preferences.

However, familiarity with the total pattern of laboratory findings in the area of intragroup communications, coupled with a few moments of contemplation, should make it clear that there are no real contradictions between the experimental results and the field observations. When an inhabitant of Erie County chose to discuss the Presidential election with other Republicans rather than, say, with a particular neighbor who was a Democrat, his decision was affected by a host of variables, many of which were controlled and therefore nonoperative in the laboratory. To name but two of these factors, the individual might have avoided speaking to his Democratic neighbor, even though the latter was a deviate in the community group, because of (a) previous learning, and/or (b) his own uncertainty regarding the correctness of his political choice.

Past experience with the neighbor or other Democrats could well have taught the individual that these people are not likely to change their opinions. Thus, in any given instance, the person, on the basis of his previous learning, probably expected his neighbor to maintain his discrepant opinion, and therefore may have felt that "it's no use talking to the guy." This previous contact with the other members of the laboratory group is controlled in the laboratory setting by employing subjects who were strangers to each other,

and it also is for this reason that the phrase, "at the onset of group discussion," has been repeatedly stressed throughout the course of the present paper. The discussion period given to the present Ss is relatively brief, only ten minutes; the Ss probably developed the expectation that the deviate would persist in his deviation only toward the very end of this period. As Schachter has shown in a laboratory experiment (13), once this expectation arises, communication to the deviate begins to decline.

Experimental findings also indicate that intragroup communication is affected by the degree of the member's confidence in the validity of his opinion; the lower this feeling the greater the likelihood that the individual will seek to communicate with another whose views are close to his own (8; 9, pp. 226-230). Here again, the citizen of Erie County may have wanted to talk only to others sharing his political opinions because of his uncertainty that these opinion were correct. In other words, his political communications could have been motivated by the desire to obtain additional support for his beliefs. The present experimental setting was designed to control and minimize the effects of this confidence. Since group members whose opinions are shared by most of the others in the group are more likely to believe that their opinions are correct than members occupying the minority position (8), all Ss were informed that the majority of the group agreed with them.

It is clear, then, that the relationships uncovered in "real-life" settings are relatively equivocal in their meaning. When Mr. Smith of Erie County chose to engage in political conversations only with those of similar beliefs (assuming that this is the causal direction involved in the correlation reported by Lazarsfeld, *et al.*) this decision could have been influenced by a great number of factors. Laboratory experimentation permits us to unravel these causal chains with some degree of certainty.

SUMMARY

The present study was designed to test three hypotheses: (a) Festinger's principle that group members whose opinions are shared by the majority of others in the group will direct most of their initial communications to the few opinion deviates; (b) that there will be a greater proportion of communications to the deviate during a ten-minute discussion period, and a stronger tendency to reject him at the end of this period if his deviation persists, in highly interdependent than in less interdependent groups; and (c) that the S's level of affiliation motivation will be positively correlated with the proportion of communications to the deviate and negatively correlated with a tendency to reject him in the highly interdependent groups but not in the less interdependent groups. The first two hypotheses were confirmed and

suggestive evidence was obtained providing partial support for the third hypothesis.

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